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SATURDAY JULY 10 1948

TABLE OF CONTENTS

Thiouracil in Treatment of Thyrotoxicosis H. P. HIMSWORTH, M.D., F.R.C.P. 61

Liver Function Tests During Thiouracil Treatment JOHN GOODWIN, M.D., M.R.C.P. 64

Blood Diastase and Lipase Changes in Acute Pancreatitis H. WAPSHAW, M.D., F.R.F.P.S., F.R.C.S.Ed. 68

Streptomycin Dermatitis in Nurses JOHN CROFTON, M.D., M.R.C.P., and H. M. FOREMAN, M.B., M.R.C.P. 71

Idiopathic Hypersplenism ROBERT SEMPLE, M.B., M.R.C.P. 72

Peptic Ulcer During Pregnancy D. W. JAMES, M.B., B.S., M.R.C.O.G. 74

Aplastic Anaemia in Simmonds's Disease ARNOLD BLOOM, M.D., M.R.C.P., AND CHARLES C. BRYSON, M.B., B.Ch. 75

MEDICAL MEMORANDA

Typhoid Meningitis. W. E. STUART, M.B. 77

GENERAL ARTICLES AND NEWS

UROLOGICAL SURGEONS IN CONFERENCE 85
THE GENETICS OF CANCER 86
BRITISH HOSPITALS ASSOCIATION: ANNUAL MEETING 88
MEDICAL PRACTICES COMMITTEE 104
MEDICAL NOTES IN PARLIAMENT 112
MEDICAL NEWS 115
QUESTIONS AND COMMENTS 117

REVIEWS

Uterine Contraction 78
Structure of Child's Lung 78
The Unwanted Child 78
Diseases of the Breast 79
Young Women 79

MEDICO-LEGAL

Compensation Barred by Unskilful Treatment 112

THE SECTIONS

Summary of Proceedings

Medicine 89
Surgery 89
Obstetrics and Gynaecology 90
Anaesthetics 91
Diseases of the Chest 93
Orthopaedics 94
Pathology and Bacteriology 95
Physiology and Biochemistry 96
Preventive Medicine 97
Dermatology 97
Child Health 99
Occupational Health 100
Ophthalmology 101
Neurology and Psychiatry 102
Nutrition 103

LEADING ARTICLES

The Cambridge Meeting 80
Some Points of Debate 80

ANNOTATIONS

Retirement from Office 81
Health of Arc Welders 81
Food Preservation 82
Ross Jubilee 82
Cancer Cells in Sputum and Urine 83
The Excretion of Antimony 83
Structure of Vaccinia Virus 84

CORRESPONDENCE

Cervical Sympathetic Paralysis. SIR CHARLES SYMONDS, M.D.; ERIC A. TURNER, M.B. 105

SUPPLEMENT

Annual Representative Meeting, Cambridge, 1948 ..... *31*
116th Annual General Meeting *34*
EXTRAORDINARY GENERAL MEETING *35*
ADJOURNED ANNUAL GENERAL MEETING AND PRESIDENT'S ADDRESS *35*
PROCEEDINGS OF COUNCIL *36*
RECEPTIONS AT CAMBRIDGE *37*
ANNUAL DINNER OF THE ASSOCIATION *37*
EXHIBITION OF SURGICAL INSTRUMENTS AND DRUGS *38*
OVERSEAS CONFERENCE *39*
THE CHURCH SERVICE *39*
OTHER ENTERTAINMENTS *40*
GOLF COMPETITIONS *40*
HEARD IN PETTY CURY *40*
HOSPITALS IN SOUTH-EAST SCOTLAND *41*
PRICING COMMITTEE FOR PRESCRIPTIONS *41*
H.M. FORCES APPOINTMENTS *42*
ASSOCIATION NOTICES *42*

CORRESPONDENCE—*cont.*

Lower Segment Caesarean Section. F. J. BROWNE, M.D. 105
Prevention of Tuberculosis. F. J. BENTLEY, M.D. 105
B.C.G. Vaccination. JAMES A. YOUNG, M.B.; H. B. M. MURPHY, M.B.; B. COUTS, M.D.; and R. G. APTHORPE, M.B. 106
Chances of Survival in Pulmonary Tuberculosis. ROBERT FRASER, M.D. 106
General Use of Tuberculin Test. R. W. PARNELL, B.M. 107
Xanthelasma Palpebrarum, Gallstones, and Atheroma. F. PARKES WEBER, M.D. 107
Golden Jubilee of R.A.M.C. W. C. SOUTER, M.D. 107
Foetal Infection in Prolonged Labour. W. G. MILLS, F.R.C.S. 107
Abortion Reform. EVELYN FISHER, M.D. 108
Balanced-pulse Galvanism. R. G. ABERCROMBIE, M.D. 108
Drug Addiction. P. O. WOLFF, M.D. ..108
New Conception of Angina Pectoris. R. WYBURN-MASON, M.D. 108
Backache-Sciatica Syndrome. MICHAEL KELLY, M.B. 108
Termination of Pregnancy. ELLIS STUNGO, L.R.C.P.Ed. 109
Test for Nurses. J. H. WEIR, M.D. 109
Convalescent Homes. G. C. PETHER, M.D. 109
Short Leg in Soldiers. ROBERT FULLER, M.R.C.S.; DOUGLAS L. WOOLF, M.R.C.S. 109
The S.R.M. CYRIL F. MAYNE, F.R.C.S.Ed. 110
Remuneration of General Practitioners. RALPH GREEN, M.R.C.S. 110
Medical Education and the G.P. MALCOLM TATE, B.M. 110
Working in the N.H.S. L. I. HARDY, M.B.; A. DALBY, M.B. 111
Royal Medical Benevolent Fund. C. LUTHER BATTERSON, M.R.C.S. 111
Points from Letters 111

Epidemiology Section 114

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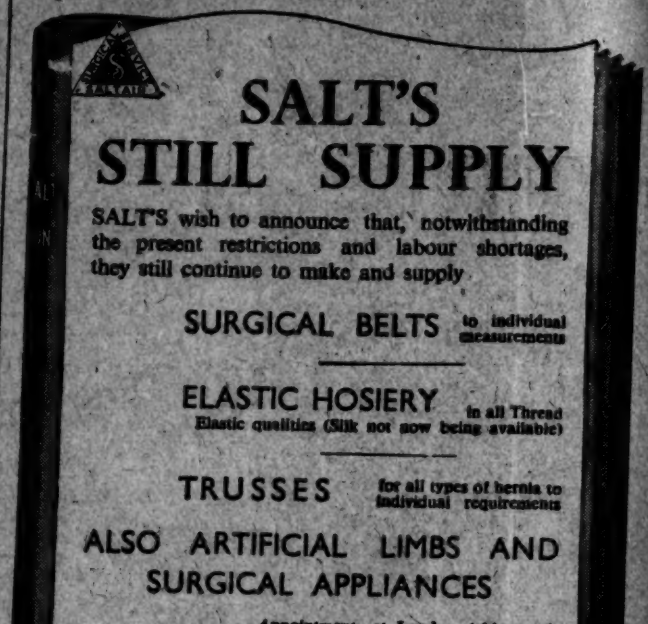
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BRITISH MEDICAL JOURNAL

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THIOURACIL AND ITS DERIVATIVES IN THE ROUTINE TREATMENT OF THYROTOXICOSIS*

BY

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Five years have elapsed since the introduction of thiouracil and its derivatives into the treatment of thyrotoxicosis (Astwood, 1943), and the time now seems ripe to attempt an assessment of their efficacy and safety in practical therapeutics. Such an assessment can be made with certainty as regards the immediate effects of this therapy, with a high degree of probability regarding its results over several years, but, because of the uncertainty surrounding the natural duration of the disease itself, only provisionally in respect of the ultimate prognosis. For convenience of discussion it is proposed first to consider the relative value of this treatment when no contraindication such as idiosyncrasy precludes its use, next to define the dangers which attend its employment, and finally to outline a scheme of treatment applicable under the conditions of general practice.

It is now established beyond any reasonable doubt that by means of thiouracil the manifestations of thyrotoxicosis can rapidly and effectively be brought under control. Interest in regard to this initial phase of treatment has moved to the consideration of factors modifying the response of the patient to thiouracil therapy. There is no doubt that different patients vary widely in the speed of their response, although the great majority are controlled within a month or six weeks. As a general rule the more severe the case the more dramatic the response, so that, although many cases are too severe for any other form of initial treatment, one can say that there are no cases too severe for thiouracil therapy. To this fortunate fact may be attributed the virtual disappearance of deaths from that highly fatal exacerbation of thyrotoxicosis, the thyroid crisis.

There remain, however, a few cases which react so slowly as to be relatively resistant. These include some patients with nodular goitres and those previously treated with iodine. Premedication with iodine can cause a temporary but well-marked resistance, so that if it is desired to give thiouracil to a patient already under treatment with iodine the latter should be omitted for a month before the new therapy is instituted. Curiously enough, this inhibitory effect of iodine does not occur when it is given to patients already under control by thiouracil, and surgeons using thiouracil as a pre-operative measure take advantage of this fact to make the thyroid gland turgid with colloid, less vascular, and so more easy to handle at operation.

Dosage

The other knowledge that has emerged from experience in the initial treatment of the disease is that unnecessarily large doses of thiouracil have been used in the past. Originally 1 g. daily was employed. Later the dose was reduced to 600 mg. Now we find (Trotter and Himsworth, 1948) that an equally good response is obtained by using a total dose of 200 mg. of methyl thiouracil a day.

Once the patient's symptoms are brought under control the stage of maintenance treatment is reached. From the early days of thiouracil therapy it has been appreciated that if the drug is omitted as soon as control has been achieved relapse soon follows (Astwood, 1943; Himsworth, 1944). But the dose required to maintain control is far less than is required for its institution—25, 50, or, at most, 100 mg. daily will suffice save in exceptional cases, and more will sooner or later produce myxoedema. The aim should be to give the minimum dose of thiouracil required to maintain the weight gained, the resting pulse rate at 80 or thereabouts, and the symptoms in abeyance. Should the patient's requirements fall faster than reduction of dosage myxoedema will arise, and this will quickly be brought to the physician's notice by the patient's complaints of inertia and tiredness, and by the appearance of puffiness of the face.

The effect of thiouracil upon certain special features of thyrotoxicosis, such as the eye signs, the goitre, and the occasional complication of auricular fibrillation, can now be stated with some assurance (Himsworth *et al.*, 1947).

A distinction must be drawn between exophthalmos—genuine protrusion of the eyeball—and lid retraction (Pochin, 1937–8). Although it is customary to speak of exophthalmic goitre, only about one-third of the cases of thyrotoxicosis with diffuse goitre, and less than one-tenth of those with nodular goitre, have true exophthalmos. In the majority of cases the appearance of exophthalmos is an optical illusion dependent upon retraction of the upper lid, and, although most cases of true exophthalmos have lid retraction as well, it is to this that the staring appearance of the eyes is largely due. As a practical clinical rule it can be said that true exophthalmos is revealed by visible sclera below the cornea, and lid retraction by visible sclera above the cornea. The effects of thiouracil therapy on these two ocular components are exactly the same as the effects of thyroidectomy. It does not reduce true exophthalmos, and indeed, like surgery, may lead to its increase. It removes lid retraction in about two-thirds of the cases and reduces its degree in practically all: again, as with surgical treatment, this beneficial result may not be fully achieved until one to two years after treatment is begun.

In patients receiving thiouracil the goitre may enlarge, diminish, or remain unchanged. Enlargement is due to overdosage. Slight or moderate diminution in the size of the gland occurs in most cases with toxic diffuse goitre. Disappearance of the goitre has as yet been observed in less than 10% of such cases, and then only after two or

*Read in opening a discussion in the Section of Medicine at the Annual Meeting of the British Medical Association, Cambridge, 1948.

more years of treatment. It is possible that with longer periods of observation a larger proportion of cases will behave in this way; and in this connexion it should be noted that the gland may continue to diminish after it has been judged permissible to stop thiouracil treatment. Nodular goitres, so far as is known, remain unchanged.

Auricular fibrillation complicating thyrotoxicosis is susceptible to thiouracil therapy. If the arrhythmia is intermittent it usually disappears completely with control of the thyrotoxicosis. If persistent it may so disappear, but, should it not, the rhythm can be brought to normal with quinidine after the thyrotoxicosis has been controlled. It then usually remains regular.

Chances of Cure

The question now arises, Is it possible to cure thyrotoxicosis with a course of thiouracil therapy? It has already been mentioned that if thiouracil is stopped after the three to four weeks' treatment required to bring the disease under control then the patient relapses to his original state in about the same time. It was soon noted, however, that if control was maintained for longer periods the patient took correspondingly longer to relapse, and it became evident that some patients showed no signs of relapsing at all. It is as yet too early to talk of permanent cures in the sense that the patient is rid of his thyrotoxicosis for life, but the evidence already available suggests that remissions which show every indication of being established occur in a reasonable proportion of the cases treated solely with thiouracil (Himsworth, Morgans, and Trotter, 1947; Trotter and Himsworth, 1948). Our early results bearing on this point were vitiated by stopping treatment too soon. We had not then appreciated that treatment must be continued for months after the condition has been brought thoroughly under control. In those of our cases which have had a remission lasting over two years since thiouracil was stopped the average duration of thiouracil treatment was 15 months ± 6.3. Judging by the experience with 22 patients who have been followed up since they were given a course of thiouracil three years or more ago there is a steady decline in the number requiring thiouracil until, after 2½ years, only about one-third of the total need it. These consist of patients who have continued to need the drug and those who, having stopped its use, began to show signs of thyrotoxicosis and need to start it again. All the patients in the group, however, are well and at work irrespective of whether they are taking thiouracil or not. Whether with further observation some of those who have relapsed will, after more treatment, join the group who have achieved what promises to be either a cure or, at least, a prolonged remission remains to be seen. At present it can be said that a patient starting thiouracil treatment has about a 3 to 1 chance of securing an apparently permanent remission after about 9 to 21 months of treatment.

Mechanism of Remission

How thiouracil produces an apparently permanent remission is still obscure—as obscure as how subtotal thyroidectomy does the same thing. It is probable that both treatments affect the body in the same way, for both reduce the output of thyroid hormone, one chemically and the other mechanically. What is apparent from the experience with thiouracil is that to secure a remission the production of this hormone must be restrained within normal limits for a considerable period. This suggests two possible explanations (Trotter and Himsworth, 1948). The first is that thyrotoxicosis is a condition of limited duration tending to spontaneous cure in a matter of months or a few years, and that thiouracil and thyroidectomy simply tide the patient over until a spontaneous remission occurs. Observation on cases collected before surgical treatment was widely available (Murray, 1902; Mackenzie, 1905) lend some support to this idea. The second is that these measures break a vicious circle. Ordinarily, thyroid activity is adjusted by the anterior pituitary gland to maintain a rate of metabolism which we call normal, increased output of the thyroid hormone inhibiting the anterior pituitary gland and so indirectly retarding thyroid activity, diminished output causing increased pituitary activity and secondary stimulation of the thyroid. The patient with thyrotoxicosis maintains her metabolism at higher levels than this. It is possible that when her heightened metabolism is reduced to normal by curtailing the production of thyroid hormone, and is maintained at the normal level for a sufficiently long time, the activity of the influences controlling thyroid activity may become adjusted to work at this new and normal level of metabolism and so permit a cure to be established. This latter suggestion would explain the observation that the duration of remissions after thiouracil lengthens with the duration of the antecedent therapy, and would be in accord with the hypothesis that exophthalmic goitre proper is essentially due to overactivity of the anterior pituitary gland, the exophthalmos being a direct expression of this and the thyroid hyperfunction a secondary effect.

Dangers of Thiouracil Therapy

Attention can now be turned to the dangers of thiouracil therapy. In doing this a clear distinction should be drawn between the effects of overdosage (that is, those effects which can be produced in any person by giving too much of the drug) and idiosyncrasy (those effects occurring in a minority of patients who are inexplicably susceptible to its action).

Overdosage.—The two main manifestations of overdosage—increase in size of the goitre and myxoedema—have already been mentioned. They are easy to recognize and are speedily remedied by omitting treatment, but should not occur. A common manifestation of its action that might be mistaken for overdosage may conveniently be mentioned here. In many patients the level of white cells in the blood is lower after a week or so of treatment than it was at the beginning. So long as the total count is not below 3,000 per c.mm., and the polymorphonuclear cells constitute 50% of the total, this fall can be disregarded.

Idiosyncrasy.—Manifestations of idiosyncrasy occur in about 10% of patients (Moore, 1946), but not all are an indication for abandoning this form of treatment. They rarely appear before the seventh day and 80% occur within six weeks of starting thiouracil. The majority of sensitive patients are thus weeded out in the period during which they are under close observation. The only common toxic effects are drug fever and skin rashes. Provided these are not accompanied by a significant fall in the polymorphonuclear cells of the blood, treatment should continue without interruption. The fever usually occurs at the tenth day, and lasts two or three days. If thiouracil is omitted it subsides, only to return when the drug is restarted; if thiouracil is continued it disappears permanently. Other, but uncommon, reactions which are usually transient and do not necessitate cessation of therapy are enlargement of the lymphatic glands, spleen, and salivary glands, and joint swellings. These manifestations of sensitivity are all relatively minor matters; but there is one manifestation—agranulocytosis—which is serious, and as the danger from this has been heavily stressed it is necessary to review the subject in the light of more mature experience.

Agranulocytosis.—Agranulocytosis occurred in 207 out of 9,281 cases under treatment with thiouracil—that is, in about 2% of all cases (Moore, 1946). Of these one-quarter died. In assessing these results one must remember that those 9,000-odd cases were the first to be treated with thiouracil, when heavy doses were employed and physicians were only just beginning to

learn how to use the drug. It is probable that a second survey now might reveal a lower incidence. The second point to remember is that at the time when these cases were under treatment penicillin was not available to all clinics participating in the survey, and that if it had been the mortality rate would have been much lower. As agranulocytosis is the only cause of death in thiouracil therapy this is a matter of some importance when comparisons are being made with other methods of treatment. It now seems clear that disappearance of the polymorphonuclear cells from the blood causes no ill effects unless infection supervenes. Stop the drug, abolish the infection with penicillin, and in the space of a week or ten days granulocytes will return to the blood and recovery occur. The whole problem is one of early diagnosis. If this could be ensured it is probable that the majority of cases, if not all, would recover. In an attempt to detect cases in the early stages Dr. M. E. Morgans, in my unit, has carried out frequent blood counts, including Arneth counts, to detect any inflow of immature cells. We have come to the conclusion that such precautions are worse than useless : useless because agranulocytosis develops like a bolt from the blue, and sometimes within two or three days of finding a normal blood count ; worse than useless because a normal count may impart a quite unjustifiable sense of security. The only real safeguard is to ensure that the patient thoroughly understands that on the advent of fever or sore throat he must immediately inform his medical attendant and stop taking thiouracil. On receipt of such information the doctor, whatever the hour, should arrange for a blood examination, and if this reveals few or no polymorphonuclear cells he should start penicillin therapy in full doses at once. Few physicians several years removed from qualification would care to trust to the accuracy of blood counts performed by themselves. But we can all recognize a polymorphonuclear cell in a stained blood smear and so tell whether agranulocytosis is present or not. To make such smears is a simple matter, and if the physician is prepared to do this or can arrange for it to be done he can undertake thiouracil therapy with few qualms. When, however, agranulocytosis has once developed, treatment with thiouracil should be abandoned and recourse be had to surgery.

Malignant Changes.—The question has also been raised whether thiouracil might not induce malignant changes in the thyroid. Malignant changes have been produced in animals by using large doses of thiourea over several years. But such experiments are not comparable, either in dosage or in relative duration, to therapy in man. Sooner or later, however, it is inevitable that a case of carcinoma of the thyroid will be misdiagnosed as a benign toxic goitre and treated with thiouracil. When one considers the thousands of patients treated in this way, and the heavy dosages employed previously, it is significant that, so far as I am aware, no convincing case of carcinoma of the thyroid in a patient treated with thiouracil has as yet been reported.

It will be noted that no mention has been made of the relative toxicity of the different derivatives of thiouracil. Between the three in common use at present—thiouracil, methyl thiouracil, and propyl thiouracil—there is, according to our experience on man, little to choose (Morgans, 1947). The majority of our cases have been treated with methyl thiouracil.

Comparison with Surgery

The final question in assessing the value of this new therapy is that of its relative safety and efficacy in comparison with subtotal thyroidectomy. First the relative safety of the two methods may be considered. The death rate ascribable to thiouracil is entirely due to the complication of agranulocytosis. Even in the first series of cases treated it amounted to no more than 0.4 to 0.5%. The general mortality rate from thyroidectomy is unknown. Superb surgeons, operating with trained teams in special clinics, claim to have reached figures which approach those obtained in the early days of thiouracil treatment. It is probable that the mortality rate in the best general hospitals, both in this country and abroad, is not far below 2%. In this country in general it is certainly considerably higher. So, even if all those affected by agranulocytosis were to die, the mortality rate over the country as a whole for cases treated with thiouracil would still be considerably less than for those treated surgically. And there is another factor to be taken into account in this connexion—the cases judged to be too severe for surgery. Such may be few with a highly skilled surgeon, but in this group the mortality rate is high. No cases are too severe for thiouracil. From the standpoint of safety as a routine treatment there can therefore be little doubt that thiouracil treatment is, in the absence of certain special complications mentioned below, the treatment of choice.

The next point to be considered is the relative efficacy of the two methods in the control of toxic symptoms. It can be answered in a sentence. Judged by any criteria—abolition of symptoms, gain in weight, capacity for work—thiouracil will do anything that the best surgery can. Lastly there remains the question of their respective abilities to promote a cure. We know that by means of surgery the majority of cases of thyrotoxicosis receive lasting benefit. It is still too early to judge the permanency of the benefits of thiouracil treatment. What can be said now, however, is that two-thirds of the patients so treated may expect to achieve what has every appearance of being a permanent remission, but that it is as yet impossible to distinguish on first attendance those who will from those who will not respond so favourably. In view of this promising experience, the safety of thiouracil treatment, and its efficacy in controlling thyrotoxicosis it seems permissible to suggest that, with the few exceptions mentioned later, all cases should first be given a full course of medical treatment and subsequent therapy determined by the results of this. The comparison now resolves itself into matters of circumstance. Is it preferable to enter on a long course of thiouracil treatment or to take the risk of operation at the start and thus curtail the period of medical supervision ? Is the goitre so disfiguring as to be a significant factor in the patient's life ? Can the patient be trusted to observe instructions ? These are questions which must be answered in the light of the facilities available and the patient's temperament, and the only person who can answer them is the patient's medical attendant.

A Scheme for the Routine Use of Thiouracil

The foregoing considerations can now be summarized in a scheme for routine treatment with thiouracil.

When a patient is obviously thyrotoxic, put her to bed, give appropriate sedatives, and start thiouracil at once in doses of 100 mg. twice daily. This will remove all danger of the condition getting worse and allow ample time for further consideration. If, on the other hand, the case appears mild and the diagnosis seems doubtful, put the patient to bed, prescribe sedatives, and observe the effect. If still in doubt after several days of observation, then nothing but an estimation of the basal metabolic rate will settle the diagnosis.

Examine the goitre carefully. Obtain, if possible, anteroposterior and lateral radiographs of the trachea. If tracheal compression is present or there is any suspicion of malignancy, surgical measures are indicated. Similarly, if the goitre is wedged in the upper aperture of the thorax or is large and retrosternal, surgery is advisable. In the absence of such complications proceed with thiouracil treatment.

Continue treatment with 200 mg. daily until the weight is rising, the pulse is slower, and the symptoms of thyrotoxicosis are obviously disappearing. Determinations of the basal metabolic rate are unnecessary save for diagnostic purposes. A close watch should be kept on the temperature, and if this rises or any toxic symptoms appear the blood should be examined for agranulocytosis. Routine

blood counts are, however, both unnecessary and useless. Judge the improvement by clinical evidence. When improvement is apparent, allow the patient to get up; when obvious—and this will usually take about a month to six weeks—reduce the dose to 50 mg. twice a day.

The stage of maintenance therapy has now been reached. As soon as the rising weight curve begins to level off, or if there is any suggestion of myxoedema, reduce the dose to 50 mg. a day. This will suffice in the majority of cases, but if it does not, and the weight begins to fall and slight symptoms return, raise the dose again to 50 mg. twice a day. Having determined the appropriate dose, maintain it at this level for at least twelve months. Keep a close watch for the sudden appearance of lethargy and puffiness of the face, which are the first signs of myxoedema, and if these appear reduce the dose. If after nine, twelve, or fifteen months the condition is satisfactory, give 50 mg. on alternate days for three to six months. If the condition remains satisfactory, treatment can be suspended. When in doubt, continue treatment.

The frequency of visits to the patient depends upon the accuracy with which information can be obtained of her condition. Assuming that reasonably reliable information can be obtained, the patient should be seen daily during the initial period, less frequently in the second month, at weekly or fortnightly intervals in the third, and thereafter she need not be seen more often than once a month, or even, towards the end of the maintenance period, once every two or three months. After cessation of treatment the patient should attend at three-monthly intervals for the first year. These infrequent visits to a patient undergoing a treatment which is potentially, if only slightly, dangerous are suggested on the understanding that the physician is confident that the patient will at once report any untoward event and that immediate arrangements can be made for the simple investigations necessary to detect agranulocytosis. It cannot be too strongly emphasized that every patient must understand that on the appearance of fever or a sore throat thiouracil must be omitted and the doctor informed at once, and that the blood must be examined for granulocytes immediately. Should they be few or absent, penicillin in full doses must be started at once. If fuller, and perhaps more expert, investigations reveal later a normal blood count, no harm will have been done and thiouracil can be restarted. If, however, they confirm the diagnosis a dangerous delay will have been avoided and recovery is probable; but thereafter thiouracil must not be used on that patient.

Lastly, after the cessation of thiouracil treatment it will be found that about one-third of the patients, although well when taking thiouracil, sooner or later relapse after its omission. The decision how to deal with such cases depends largely on the patients. If they are content to undergo another course of treatment with the drug there is no reason why they should not, and it will be found that the condition rapidly comes under control again on administering their particular maintenance dose. If, however, they are averse from further regular attendances and skilled surgery is available, then, until we have more certain information regarding the results of long-term thiouracil therapy, surgical intervention should be considered.

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LIVER FUNCTION TESTS IN CASES TREATED WITH THIOURACIL COMPOUNDS

BY

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It has long been realized that liver damage occurs in thyrotoxicosis. Changes comprising fatty degeneration, multilobular cirrhosis, and acute yellow atrophy have been noted (Schaffer, 1940). Moschcowitz (1946) described a cirrhosis, with fibrosis round the radicles of the hepatic artery, due to the increased velocity of blood flow and increased blood volume in the hepatic artery which disturb the pressure relations between the portal vein and the hepatic artery. Stasis occurs round the radicles of the hepatic artery and the lesion begins as capillary congestion. This condition would seem to be the reverse of the centrilobular congestion that occurs in congestive failure of the right side of the heart.

Thiouracil compounds are said to be broken down in the liver (McCullagh, 1946), and might therefore exert a toxic effect, although György and Goldblatt (1945) found that 0.1% thiouracil fed to rats maintained on a cirrhosis-producing diet failed to produce any liver damage. McClosky *et al.* (1947) fed cats for seven to eight months on a high-protein diet and gave doses of up to 300 mg. of thiouracil per kg. daily; they found no more than moderate fatty degeneration of the liver. Hepatogenous jaundice has been reported as an uncommon complication of thiouracil therapy in six cases (Gargill and Lesses, 1945; Sloan and Shorr, 1944; Kahn and Stock, 1944; Livingston and Livingston, 1947). Five patients recovered completely on withdrawal of the drug; the sixth died of associated agranulocytosis. Laparotomy on one case revealed biliary stasis but no other definite lesion (hepatic biopsy). The liver of the patient who died was swollen, with dark-brown parenchyma and distended lobules. Diabetes mellitus was also present. Sloan and Shorr suggest routine icteric indices during initial treatment.

Present Investigation

Serial liver function tests have been carried out at six-monthly intervals over a period of 12 months on 81 patients who were under treatment with thiouracil compounds for thyrotoxicosis. In selecting the tests an attempt was made to combine ease of performance with a maximum of accurate information regarding early liver damage. Generally speaking, the empirical tests of liver function, while not involving the patient in a complicated preparation, are more useful in indicating whether jaundice is hepatocellular or obstructive than in detecting early stages of liver damage. Tests which aim at the detection of slight degrees of liver damage are more cumbersome and time-consuming for the laboratory staff and patients.

The following tests were chosen, having the practical advantage that they could all be performed on a single specimen of 20 ml. of blood. Their value and limitations will be discussed later.

	Normal Values
Serum bilirubin	0.3–1 mg. per 100 ml.
Serum alkaline phosphatase ..	5–15 King-Armstrong units
Takata-Ara reaction	Negative
Thymol turbidity test ..	1–5 units
Total serum protein	7–8 mg. per 100 ml.
Albumin	4–5.2 mg. per 100 ml.
Globulin	2–2.8 mg. per 100 ml.
Albumin/globulin ratio 2:1	

Results

All of the 81 patients tested had been under treatment with thiouracil compounds (thiouracil, methyl thiouracil, and propyl thiouracil) for periods varying from two weeks to three years. Of these, 32 (40%) showed some abnormality. Only 8 patients (Cases 7, 9, 10, 15, 18, 19, 27, 30) were tested before therapy was started, since the others were already under treatment when the investigation was begun. Six patients showed abnormalities before treatment (Cases 7, 9, 10, 15, 18, 27). Details of all the patients showing such abnormalities are set out in Table I; reports of Cases 22 and 23 are given separately. In none of the cases tested was any relation found between the type of thiouracil compound and the presence or absence of liver damage.

The effect of thiouracil therapy of up to six months' duration on liver function was assessed in the six cases showing impairment before treatment. Five cases showed improvement, and one case (No. 27) further impairment of function. (Alkaline phosphatase rose from 18 King-Armstrong units before treatment to 24 after four months' treatment; other tests were normal. Five months after stopping treatment the alkaline phosphatase was 18 and the Takata-Ara reaction positive. Cases 19 and 30 showed no impairment of function before treatment—Case 30 had an alkaline phosphatase of 19 King-Armstrong units after one week's treatment, and Case 19 had a thymol turbidity of 5.5 units after two months' treatment. In each of these cases only one function test was abnormal, and the result was barely outside the normal range.

TABLE I.—*Cases showing some Abnormality. (Abnormal findings only are given unless a previously abnormal result has become normal.)*

Case No.	Age	Sex	Duration of Thyrotoxicosis	Duration of Treatment Before First Test	Maintenance Dose in mg. Daily	When First Test Performed. Type of Abnormality	Further Test
				Cases Treated with Thiouracil			
1	61	F	3 years	2 years	50	2 years after starting treatment T.A. positive	8 months later T.A. negative
2	45	F	4 ,,	3 ,,	50	3 years after starting treatment A.P.19	7 months later A.P. 23
3	56	F	24 ,,	4 ,,	20	22 months after starting treatment T.A. positive	4 months later (no further treatment) T.A. negative
4	44	F	11 ,,	2 weeks	—	1 year later A.P. 21; S.B. 4·4	4 months later (after *x*-ray therapy—no thiouracil). A.P. 18; T.A. positive
5	45	F	2½ ,,	—	150	After 2 years' treatment T.A. positive	8 months later T.A. negative
				Cases Treated with Methyl Thiouracil			
6	46	F		1 year	50	10 months after starting treatment T.T. 5; A.P. 20	8 weeks later A.P. 16; T.T. 3
7	57	F	3 ,,	6 months	75	Before treatment—3 years after onset A.P. 18	6 months later A.P. 12
8	44	M	4 ,,	1 month	600	6 months after stopping treatment A.P. 20; T.A. positive	No further thiouracil 9 months later. A.P. 18; T.A. negative
9	57	F	9½ ,,	6 months	50	Before treatment and 9 years after start of disease A.P. 25	5 months later A.P. 12
10	52	F	3½ ,,	8 ,,	50	Before treatment and 3 years after start of disease A.P. 23	8 months later A.P. 21
11	56	F	?	18 ,,	50	After 1 year treatment A.P. 25; T.A. negative	8 months later A.P. 20; T.A. positive
12	46	F	2 years	15 ,,	25	6 months after treatment. All negative	4 months later; T.A. positive 7 months later; all negative
13	39	F	6 ,,	1 year	50	4 months after treatment started All negative	6 months later T.A. positive; T.T. 7
14	41	F	3 ,,	18 months	12·5	18 months after start of treatment All negative	3 months later No further treatment given
15	53	F	5½ ,,	6 ,,	100	Before treatment and 5 years after onset A.P. 17	6 months later A.P. 15
16	39	F	5 ,,	2 years	1·25	After 20 months' treatment T.A. positive (4 months after starting treatment)	8 months later T.A. negative
17	55	F	2 ,,	1 year	75	11 months after treatment T.A. positive	4 months later T.A. negative
18	61	F	6 months	3 months	50	Before treatment T.A. positive	2 months later T.A. negative
19	40	M	4 ,,	4 ,,	50	Before treatment N.A.D.	2 months later T.T. 5·5
20	19	F	2½ years	2 years	12·5	After 20 months' treatment T.A. positive	Defaulted
21	36	F	4 ,,	3 ,,	75	After 2½ years' treatment T.A. positive	4 months later T.A. negative
22	F; 23 M—See separate Case Reports.						
				Cases Treated with Propyl Thiouracil			
24	57	M	5 years	1 year	50	4 months after treatment A.P. 19	6 months later and 3 months after stopping P.T. A.P. 12
25	21	F	2 ,,	6 months	25	6 weeks after treatment All negative	9 months later T.A. positive
26	56	M	2 ,,	1 year	50	7 months after starting treatment T.A. positive	10 months later T.A. negative
27	48	F	6 ,,	4 months	25	Immediately before treatment A.P. 18	After 4 months' treatment. A.P.24 5 months later, after stopping P.T., T.A. positive and A.P.18
28	51	F	4 ,,	14 ,,	50	6 months after starting treatment A.P. 20	5 months later A.P. 15
29	52	F	2 ,,	9 ,,	25	6 months after treatment A.P. 18	Defaulted
30	38	F	4 ,,	10 ,,	50	Before treatment, 3 years after onset All negative	After 1 week's treatment A.P. 19
31	55	M	18 months	15 ,,	50	3 months after treatment T.A. positive	8 months later. T.A. negative No thiouracil for 5 months
32	21	F	1½ years	10 ,,	50	10 months after treatment A.P. 18	2 months later. A.P.23 No treatment for 5 months

A.G. = Albumin/globulin ratio. A.P. = Alkaline phosphatase. S.P. = Serum proteins. S.B. = Serum bilirubin. T.A. = Takata-Ara. T.T. = Thymol turbidity. H.A. = Oral hippuric acid excretion test. K.A.u. = King-Armstrong units. A. = Albumin. G. = Globulin. C.G. = Colloidal gold reaction. C.B. = Coagulation band.

The influence of further thiouracil treatment for three to twelve months on cases already showing impairment of liver function, but not tested before treatment, was assessed. Of these 24 cases, liver function improved in 14 (58%), deteriorated in 6 (25%), and remained unchanged in 4 (17%). Of special note are Case 14, which had a rise in alkaline phosphatase after stopping treatment, and Cases 24 and 31, in which a fall in alkaline phosphatase and reversal of a positive Takata-Ara reaction, respectively, occurred after stopping treatment.

Table II shows that the most frequent types of abnormality were a rise in alkaline phosphatase combined with a positive Takata-Ara reaction. Table III shows that association of more than one abnormality occurred in the same patient in only eight cases, and the effect of further therapy on seven of these is also noted, three being improved, one unchanged, one becoming worse, and two being inconclusive. One patient (Case 23) died without further treatment being resumed. Clinical jaundice occurred in Cases 22 and 23, and hepatomegaly in four cases (23, 21, 5, and one with normal tests). Of the two patients with jaundice, one (No. 23) died from multilobular hepatic cirrhosis. He had a history of recurrent thyrotoxicosis for 14 years, and nine months before death had had a serum bilirubin of 1.2 mg. per 100 ml. previous to thiouracil therapy. He was not clinically jaundiced at this time, and other liver function tests were not done. He did not show any improvement when thiouracil was withdrawn two weeks before death.

TABLE II.—*Cases and Types of Abnormality*

Type	No. of Cases
Fall in A/G ratio	2
Rise in S.B.	3
Rise in A.P.	16
T.A. positive	18
Rise in T.T.	2

TABLE III.—*Association of Abnormal Findings in Same Patient (8 Cases)*

Case No.	Abnormalities	Drug	Effect of Continued Therapy
6	T.T. 5; A.P. 20	M.T.	Improved
13	T.T. 7; T.A. positive	M.T.	Worse
8	A.P. 20; T.A. positive	M.T.	Improved
27	A.P. 18; T.A. positive	P.T.	Inconclusive
4	S.B. 4·4; T.A. positive; A.P.18	M.T.	,,
22	A. 3·6; G. 3·2; A/G.. ratio 1 : 1; T.A. positive; A.P. 17; S.B. 4·8; T.T. 1	M.T.	Improved when M.T. restarted
23	T.A. positive; T.P. 6·5; A. 3·1; G. 3·4; S.B. 27 (C.G. 5; A.B. 7)	M.T.	No further therapy. Died.
11	A.P. 20; T.A. positive	M.T.	Unaltered

The other case (No. 22) in which liver biopsy revealed only biliary congestion showed improvement in function tests and disappearance of jaundice when thiouracil was resumed. Thyrotoxic hepatic cirrhosis is said to occur usually in patients with long-standing or recurrent disease, and the findings in both cases suggest that the hepatic involvement was due to the disease and not to the thiouracil compound.

Value and Limitations of Tests Used

Higgins, O'Brien, Stewart, and Witts (1944), from observations on a large number of patients with and without liver disease, concluded that the serum bilirubin, alkaline phosphatase, and differential plasma protein values would give as much information as the more elaborate tests. They found elevation of the alkaline phosphatase in one out of five cases of uncomplicated thyrotoxicosis studied. Sherlock (1946) states that in jaundiced patients the serum bilirubin and alkaline phosphatase estimations are as useful as the more complicated procedures, though the serum albumin-globulin ratio may give valuable data regarding prognosis. She believes that liver function tests are of little value in non-jaundiced patients. Maclagan (1947) considers the thymol flocculation test and alkaline phosphatase level to be of value in the differential diagnosis of hepatic and obstructive jaundice. A serum alkaline phosphatase of more than 30 King-Armstrong units with a negative flocculation reaction suggests obstructive jaundice, while positive flocculation tests with normal alkaline phosphatase values suggest hepatocellular jaundice. Maizels (1946) pointed out that the Takata-Ara reaction may give positive results in conditions such as myelomatosis or sarcoidosis.

Significance of Results

The most frequent abnormal findings were an elevation of the serum alkaline phosphatase and a positive Takata-Ara reaction which occurred in 16 and 18 patients respectively. In no case did the former exceed a level of 30 King-Armstrong units. Elevation of the serum alkaline phosphatase tends to occur in any condition in which decalcification of bone is a feature. Generalized osteoporosis is present in thyrotoxicosis, which suggests that an extrahepatic factor may be concerned in the elevation of the serum alkaline phosphatase level above 20 King-Armstrong units. The albumin/globulin ratio was altered only in the two patients who were jaundiced, and in the fatal case (No. 23) a serum bilirubin of 27 mg. per 100 ml. was combined with a positive Takata-Ara reaction and normal alkaline phosphatase. The thymol turbidity was normal, and the albumin/globulin ratio 1 : 1. These findings suggest that the Takata-Ara test may be more reliable than the thymol turbidity, since there was gross intrinsic liver damage in this case.

Case 22

A woman aged 47. Duration of disease, 3 years. Duration of treatment (methyl thiouracil) 2½ years. Maintenance dose, 50 mg. daily. The patient attended the endocrine clinic with faint icterus after 2½ years' intermittent treatment with methyl thiouracil. This was at once discontinued. Investigation of gastro-intestinal tract and gall-bladder failed to reveal any cause for icterus outside the liver, nor was there any evidence of a haemolytic process. Hepatomegaly present; no ascites.

First group of tests.—At onset of icterus: S.P. 6.8; A. 3.6; G. 3.2; S.B. 2; T.T. 1; T.A. positive; A.P. 11; H.A. deficient. (Patient discharged herself against advice.)

Second test 6 months later.—Congestive cardiac failure had appeared. Auricular fibrillation. Still jaundiced. Liver enlarged and tender. S.P. 6.3; A. 3.2; G. 3.0; S.B. 4.8; T.A. positive; N.P.N. 27; A.P. 18; T.T. 2; H.A. deficient; galactose tolerance normal; liver biopsy: normal—liver cells stained with bile pigment. Methyl thiouracil restarted, 50 mg. per day.

Third test, 6 months later.—S.P. 4.9; A. 2.8; A.P. 18; N.P.N. 35; S.B. 0.8; G. 2.1; T.A. positive; T.T. 1.

There was no icterus. Auricular fibrillation and thyrotoxicosis were controlled. There was chronic congestive cardiac failure, with oedema, ascites, and hepatomegaly. A blood count showed a microcytic hypochromic anaemia. A fractional test meal revealed achlorhydria.

Comment.—After restarting methyl thiouracil the icterus disappeared and the serum bilirubin fell from 4.8 to 0.8 mg. per 100 ml. The plasma protein also fell, but this might be due to further loss of protein from the circulation into the abdominal cavity and subcutaneous tissue consequent upon the chronic congestive failure rather than to further liver damage.

Case 23

A man aged 49. Duration of disease, 14 years (recurrent). Two thyroidectomies. Nine months before death, before starting methyl thiouracil, the serum bilirubin was 1.2 mg. per 100 ml.; there was no icterus. The duration of methyl thiouracil treatment was nine months; maintenance dose, 25 mg. daily (discontinued 14 days before death). Liver function tests: T.A. positive; T.T. 3; C.B. 7; C.G. 5; A.P. 14; H.A. deficient; S.P. 6.8; A. 3.1; G. 3.4; S.B. 27. There was a rapid loss of weight, with jaundice and enlargement of liver; prior to the

jaundice there was no hepatomegaly. Auricular fibrillation and incipient congestive heart failure were also present. The patient's condition deteriorated, with intense icterus, ascites and oedema, liver shrinkage, and petechial haemorrhages, and death ensued 14 days after the onset of jaundice. The post-mortem examination disclosed multilobular hepatic cirrhosis.

Discussion

The results of this investigation suggest that slight reversible impairment of liver function may occur in moderately severe thyrotoxicosis, but that there may be fatal liver damage in recurrent thyrotoxicosis of long duration.

While abnormality in only one test suggests some impairment of liver function, much more significance is attached to an abnormality in two or more concurrent tests. Elevation of serum alkaline phosphatase may in part be due to the osteoporosis of thyrotoxicosis, although it is unlikely that this is an important factor, since 65 out of 81 thyrotoxic patients had normal serum alkaline phosphatase levels.

Of 81 patients tested 32 (40%) showed some abnormality in one or more tests. These 32 cases may be conveniently divided into three groups, which of necessity overlap somewhat.

Group I: 8 Cases Tested Before Treatment.—Six of these had abnormal and two had normal tests. In five of the six cases abnormality disappeared or became less with thiouracil treatment, and further abnormality occurred in one case. In the two cases with normal function before treatment slight abnormalities appeared in only one test, after thiouracil treatment.

Group II: 24 Cases Not Tested Before Treatment, but Showing Abnormalities in One or More Tests.—Further thiouracil therapy was followed by disappearance or improvement of abnormalities in 14 cases (58%), by further abnormalities in 4 (17%), and by inconclusive changes in 2 (8%) (Cases 4 and 27).

Group III: 8 Cases Showing Abnormalities in 2 or More Tests.—While single abnormalities may be of doubtful significance, the concurrent association of abnormalities strongly suggests the presence of some impairment of liver function. These cases are set out in Table III, and it will be seen that further thiouracil treatment resulted in improvement in three, deterioration in one, no alteration in one, and inconclusive results in two. The remaining patient (Case 23) died of hepatic cirrhosis without receiving further therapy. Jaundice and hepatomegaly were present in this case and in Case 22, in which improvement occurred with the resumption of thiouracil.

Out of 81 cases treated with thiouracil drugs, only eight were considered to have definite impairment of liver function, and since thiouracil compounds exerted no certain toxic effects on the liver in the other 73 cases it is in this small group of eight cases that the relation of thiouracil compounds to liver damage is of paramount importance.

In Case 13 abnormalities which had not been present before occurred in two tests after ten months' treatment. This might be due to the inability of thiouracil to arrest the insidious liver damage caused by thyrotoxicosis, but the possibility of these changes being due to thiouracil cannot be excluded. Clinically, in this case the disease was fully controlled with thiouracil and there was no evidence of liver damage. Case 22, however, showed clinical and biochemical improvement in liver function after restarting thiouracil therapy.

All patients in the series were carefully reviewed at intervals for clinical evidence of liver disease, but with the exception of the two cases with jaundice no such evidence was found.

The conclusions to be drawn from this observation are that, while biochemical evidence of liver damage may develop or progress during thiouracil treatment, some cases show improvement in liver function tests after treatment. Although it is not possible to state dogmatically that thiouracil compounds do not damage the liver, it seems unlikely that they exert any serious effects, nor is there adequate justification on these grounds for discontinuing or rejecting thiouracil therapy in cases of thyrotoxicosis.

Summary

Eighty-one cases of thyrotoxicosis under treatment with thiouracil compounds were submitted to liver function tests in addition to clinical assessment of liver function at three-monthly to six-monthly intervals. The tests used were serum bilirubin, thymol turbidity, Takata-Ara, alkaline phosphatase, total serum proteins, and differential serum proteins. Abnormality in only one test occurred in 24 cases, and this was considered to be of doubtful significance. Eight cases showed abnormalities in two or more tests; these were taken to indicate impairment of liver function. Two of these patients were jaundiced: one died of hepatic cirrhosis, which appeared to be related to the disease rather than to the therapy, and the other improved with further thiouracil treatment. One case which showed no abnormalities in tests after treatment for four months developed evidence of hepatic damage after a further six months' treatment. In the other cases the abnormalities were diminished or unaltered by thiouracil treatment.

It is concluded that in many cases thiouracil drugs improve or do not affect liver function, but that in some cases deterioration may occur under treatment. This should not constitute a contraindication to thiouracil therapy, since such deterioration may be due to the disease rather than to the thiouracil.

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The familiar meeting room of the Medical Society of London, in Chandos Street, Cavendish Square, has been renovated and modernized, and one improvement is that Medley's famous picture of the founders of the Society, showing twenty-two medical worthies of the late eighteenth century, has been placed in a position of honour behind the President's chair. Mr. W. E. Tanner, who dealt with Lettsom and other major characters in the picture in his oration before the Society last year, devoted his presidential address on Jan. 12 to a dissertation on some of the less eminent figures, including three or four surgeons and three obstetricians. Surgeons were not considered worthy of the presidential chair for a long time. Indeed, the first surgeon to be president of the Medical Society of London was not elected until 1829, fifty-six years after the Society's foundation. Mr. Tanner drew attention to the figure of Woodville, who, with Jenner, appears in the group. Woodville was at first an opponent of vaccination, but he was converted by Jenner within the Society, and before his death in 1805 he had become a strong advocate of the practice. Then after acknowledging the diligent researches of Sir Arthur MacNalty, Mr. Tanner devoted a large part of his address to one of the most able though perhaps least worthy of the characters in Medley's group, namely, Edward Bartholomew Bancroft. This extraordinary person, a staunch supporter of Lettsom, was a man of great reputation in medicine as well as in other fields, a Fellow of the Royal Society, his sponsor being the Astronomer Royal, a leading London physician, the principal authority of his day on the subject of dyes, and personally generous, hospitable, and an indefatigable worker. But the most astonishing circumstance about him, not revealed until seventy years after his death, was that during the American War of Independence, on many visits from London to Paris, he posed as an American patriot and acted as a common spy and informer, receiving a salary from both sides. A more complex personality, as Mr. Tanner said, it would be difficult to find in history, but there he is, on the extreme left of Medley's painting, one of the founders of the Society, wearing a peruke and observing with a cynical air its present doings.

THE BLOOD DIASTASE AND LIPASE CHANGES IN ACUTE PANCREATITIS

BY

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Little has been published in this country about the pancreatic function tests that entail the study of the digestive ferments of the blood. It would appear that in America such tests as the viscometric, the copper reduction, and, to a lesser extent, the iodometric methods of estimating the serum diastase have superseded the urinary methods, which are our main stand-by, and in many clinics abroad the serum lipase tests are in common use.

The investigations here presented concern two serum tests—the one for diastase, and the other for lipase—and take the form of a study of their relative merits as aids to the diagnosis of acute pancreatitis.

Blood Diastase

It has long been known that the blood and the extracts of many of the organs and viscera of the body are endowed with starch-splitting properties (Magendie, 1846; Bernard, 1856; Foster, 1867). Carlson and Luckhart (1908), while engaged in a study of the diastatic activity of the various body fluids, observed that the levels in the blood were apt to remain unaltered in health, and cumulative evidence of this is to be found in the papers of Corbett (1912), Cohen (1925), Somogyi (1934), and Lewison (1941). Somogyi observed 100 normal subjects over a period of two years without noting any significant variation in the serum diastase level of any one individual; he found, however, that it varied widely from person to person, but was unable to establish a correlation between his findings and nutritional factors, sex, or age. The diastase content of the urine is well known to be subject to some physiological variation.

The physiological role of this ferment is not understood, nor do we know precisely the nature of the mechanism that governs its activity. Oelgoetz, Oelgoetz, and Wittekind (1935) have suggested that the diastase which normally finds its way into the intestine is absorbed in order to complete the digestion of partially split food products that may have gained entry into the lymph and blood streams. Experimental evidence is not in entire agreement with this hypothesis. Elman and McCaughan (1927) drained off the pancreatic juice by producing a total external fistula in the dog, and yet no diminution in serum levels occurred, while Crandall (1935) failed to bring about an increase by the introduction of a large quantity of fresh pancreatic juice into the bowel of normal animals. King (1914), whose attention was solely directed to the urinary diastase, did, however, report an increased output by the latter means. Most authors seem to incline to the view that the enzyme is a by-product of tissue metabolism which, once in circulation, is destined either to destruction or elimination via the kidneys. King has further suggested that it may help to maintain colloid equilibrium. The amount of diastase contributed by the pancreas to the blood has been the subject of much physiological research. We know that the infliction of trauma to the gland, ligation of its major duct, and the forced injection of chemical irritants lead to a conspicuous rise in serum diastase, and that total pancreatectomy is followed by its temporary diminution in the blood, but, as McCaughan (1934) has demonstrated, the return to normal levels takes place in either event about the same time—namely, the tenth day. In general, the other workers in this field report similar results. The compensatory mechanism responsible for this nicety of adjustment is, however, beyond the scope of this paper.

Blood Lipase

When we turn to consider the fat-splitting enzyme we find that the earlier workers, such as Doyon and Morel (1902) and Arthus (1902), held the opinion that the blood is not lipolytic under normal conditions. Cherry and Crandall (1932) also subscribed to this view despite the finding of a few positives among their controls. More recent contributors to this branch of study have succeeded in proving to their satisfaction that lipase is a common constituent of normal blood (Comfort and Osterberg, 1940; Johnson and Bockus, 1940). Cherry and Crandall made the practical observation that the emulsions of olive oil and pea-nut oil are the most satisfactory for demonstrating the increase in the lipolytic activity of the blood in cases of acute pancreatitis and of dogs that have been subjected to duct ligation. With ethyl butyrate there was no measurable change in the blood in subjects thus affected. Their findings were confirmed by Comfort and Osterberg (1934). For this reason the former urged that the name "lipase" be applied to the ferment particularly active on oils and that "esterase," which is often synonymously used, be retained as the generic name for the whole group.

Scope of Work

The present study is based on the serum enzyme findings in 10 cases of acute pancreatitis. The pathological picture, which was known through operation in nine of the patients, was varied, but it was possible to divide the cases into two main groups—the severely and the mildly affected. Of the former, six (Cases 1, 3, 4, 6, 7, and 10) showed pancreatic necrosis and haemorrhages, and in three (Cases 5, 8, and 9) the pancreas was indurated and slightly swollen. The remaining case (No. 2), which was treated conservatively, probably belonged to the latter group.

The *serum diastatic activity* was estimated by the iodometric method of Somogyi (1938). The test is technically simple and gives a sharply definable end-point. It can be performed within 30 minutes. The preparation of the starch substrate is a complicated process which takes three days to complete, but the finished product has the advantage that it can be stored for several months. The range of the normal indices is 70 to 200 units of diastase per millilitre of serum.

The *serum lipolytic activity* was estimated by the Cherry and Crandall (1932) modification of the Loewenhardt method. The patient's serum is allowed to act on an olive-oil emulsion for 24 hours under optimum conditions of *p*H and temperature. The fatty acids set free are then neutralized by an N/20 solution of sodium hydroxide. The lipolytic power of the serum is measured in terms of the number of millilitres of alkali used per millilitre of serum. In view of the disagreement over the normal presence of lipase a control series comprising 76 subjects was investigated. Five were found to be lacking in lipase. The highest normal titre was 1.5 ml., but, as may be gathered from the mean of the readings, which was 0.45 (standard deviation = ± 0.35), the majority of the normal titres fell below unity. The range of normality was taken to be 0 to 1.5 ml., which agrees with that accepted by Comfort and Osterberg (1940). The values did not alter materially in a control study to investigate the influence of meals containing an excess of fat.

These two procedures were carried out on each patient at the earliest opportunity and repeated several times during the stay in hospital. The results are shown in the Table.

Biochemical Results.—An analysis of the results showed that the highest readings for both enzymes were obtained in Case 8, which was shown by delayed laparotomy to be relatively benign as regards the pathology; the values amounted to 26.5

and 6.5 times the upper limits of normality for diastase and lipase, respectively. They presented an interesting contrast with the findings in the severely affected cases, Nos. 1 and 3, which were also examined on the first day, but a few hours later, because their readings were of a decidedly lower order. The findings beyond the second day of illness were so variable from case to case that a detailed description of each seems to be uncalled for. It suffices to state that the majority of the readings had dropped to physiological limits by the end of the first week. A comparison of the readings of the two groups of patients was made in order to find out whether there existed any correlation with the underlying pathology. The observations made will be introduced into the subsequent discussion.

Table showing the Serum Enzyme Findings in Ten Cases of Acute Pancreatitis

Essential Clinical Data	Time of Observation	Serum Diastase Units per ml. Serum	Serum Lipase ml. N/20 NaOH per ml. Serum
Case 1.—Man, 65 years. June, 1941. *Acute haemorrhagic necrosis* with scattered foci of fat necrosis, and free fluid. Died in 8th week after progressing to the suppurative stage	14 hours	4,000	5·30
	2nd day	2,130	
	3rd ,,	475	0·50
	7th ,,	320	0·50
	27th ,,	290	1·00
	57th ,,	46	Zero
Case 3.—Man, 66 years. Dec., 1941. *Acute haemorrhagic pancreatitis* of the caudal half. No fat necrosis or free fluid. Survived after a prolonged illness	15 hours		3·10
	2nd day	1,600	1·30
	3rd ,,	860	
	4th ,,	530	1·80
	12th ,,	320	
	15th ,,	406	0·20
Case 4.—Man, 70 years. April, 1942. *Acute pancreatic necrosis:* false cyst in lesser sac containing 2 pints turbid fluid; fat necrosis of omentum. Survived after a long illness	4th day	457	2·13
	7th ,,	84	0·21
	12th ,,	106	0·08
	15th ,,	57	0·30
Case 6.—Woman, 48 years. Oct., 1942. *Acute pancreatic necrosis* but no visible haemorrhages; spots of fat necrosis in surrounding parts. Survived	8th day	94	0·98
	18th ,,	145	1·36
Case 7.—Woman, 63 years. Nov., 1942. Pancreas swollen and hard but hidden by matted swollen omentum; numerous points of fat necrosis; brown effusion in peritoneal cavity. Survived	4th day	110	0·21
	5th ,,	80	0·35
Case 10.—Woman, 52 years. Feb., 1944. *Acute haemorrhagic necrosis* with much free brownish fluid tinged with bile in abdominal cavity. Died on 3rd day	3rd day		1·08
Case 5.—Woman, 45 years. Aug., 1942. Severe upper abdominal pain and vomiting; slight jaundice. At *operation* on 5th day the pancreas was diffusely swollen and indurated. No signs of haemorrhages on its surface or fat necrosis in the vicinity. Gall-bladder slightly oedematous, but no stones found in it or in common bile duct. Survived	5th day		0·9
Case 8.—Woman, 49 years. June, 1943. Severe epigastric pain and sickness for 6 hours before admission; slight jaundice; collapsed. *Operation after* 21 *days:* pancreas slightly nodular and firmer than normal. *Biopsy* revealed focal areas of acinar necrosis histologically. Gall-bladder showed early chronic change: it contained one pigmented stone 1·5 cm. in diameter. Survived	6 hours	5,300	9·80
	3rd day	460	5·80
	6th ,,	228	2·94
	48th ,,		1·35
Case 9.—Man, 49 years. Jan., 1944. Severe pain in right hypochondrium for 2 days referred to intrascapular region and right shoulder-tip. Cyanosed and jaundiced. *Laparotomy* on 2nd day revealed a hard nodular pancreas. *Biopsy* showed evidence of subacute inflammation. Gall-bladder free of stones. Survived	10th day		1·40
Case 2.—Woman, 57 years. July, 1941. Severe upper abdominal pain for 3 days. Slight jaundice. Tender right hypochondrium. Non-functioning gall-bladder. Survived without operative intervention	4th day	1,280	2·60
	6th ,,	228	1·70
	8th ,,	228	1·70

Discussion

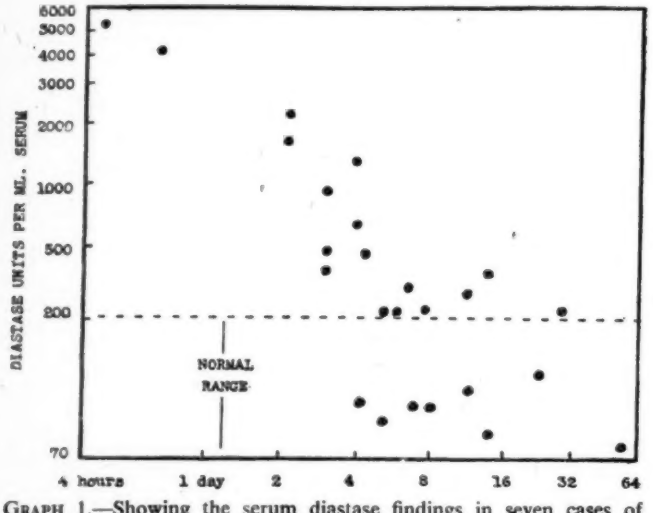
There is some experimental evidence to support the belief that the serum enzyme changes encountered in acute pancreatitis provide a measurable index of the degree of functional upset. Wohlgemuth (1909) and McCaughan, using different laboratory methods, compared the effects of ligating the two pancreatic ducts with those of tying one, and each found that complete obstruction produced a more conspicuous and more lasting rise in the serum diastase. Clasen, Johnstone, Orr, and Rice (1933) observed that the variations in diastase levels in experimentally produced pancreatitis were commensurate with the amount of glandular damage caused by the intraduct injection of chemical irritants. Baxter, Baxter, and McIntosh (1938), who were among the first to study the serum lipase changes in experimental pancreatitis, arrived at the same conclusion.

In clinical work it is much more difficult to prove that such a relationship exists. Wohlgemuth (1929) has alluded to the wide differences that may be found in the readings of apparently equally affected cases, and advanced the theory that they depended on the proximity of the lesion to the major ducts. Unger and Heuss (1927) were of the belief that the height of the rise in diastase had a prognostic significance, since all their cases with an output in the urine of over 1,000 units (Wohlgemuth) died within a few hours of operation. This flooding of the system, so to speak, with pancreatic ferments has proved to be such a transient incident in the experience of most observers that it is considered futile to attempt to establish a correlation between the grade of severity of the lesion and the gradient of the rise in enzyme activity. The highest readings recorded in the present work were found in a subacute case of only six hours' duration. It was unfortunate that the earliest of the hyperacute group was not seen until eight hours later. Mikkelsen (1934) has placed on record two interesting cases which, when investigated, had been ill for only three hours, and at that time no alteration in diastase could be detected. On repeating his tests one hour later he found that the typical enzyme response had manifested itself. Accordingly, taking into account the present findings, it would appear that the peak values are to be found between the fourth and sixth hours from the start of the condition.

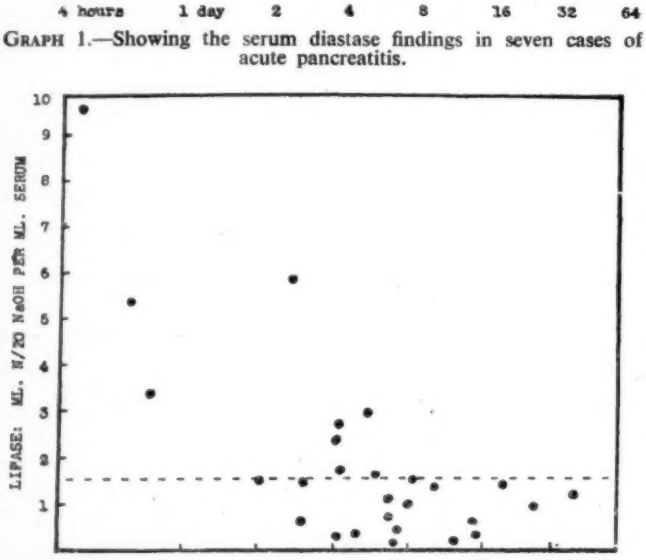
While a single diastase estimation may be uninformative there is some evidence to show that serial estimations may furnish a clue to the character of the lesion. Elman (1942)

has produced convincing evidence that a precipitate drop in levels denotes a subacute pancreatitis and that a slow subsidence is often found in association with widespread pancreatic destruction. The diastase readings in Cases 1 and 3 of my own series exemplify the latter relationship, but, as may be seen, an early return to normal activity is not incompatible with the presence of a gross necrotic lesion.

A gain in lipolytic power was also noted in the patients subjected to investigation. It was found to be particularly marked in those who were examined on the first day of illness. It is interesting to observe that the maximum level was attained in the same case in which the maximal diastase reading was found—i.e., Case 8. The later determinations, taking the series as a whole, showed a steady decline, which was more rapid in some than in others, and by the end of seven days most of the readings were normal. In other words, the fluctuations in lipase activity paralleled fairly closely those of diastase. The graphic presentations of all the results illustrate this point (see Graphs 1 and 2). It has



GRAPH 1.—Showing the serum diastase findings in seven cases of acute pancreatitis.



GRAPH 2.—Showing the serum lipase findings in ten cases of acute pancreatitis.

been claimed by those who favour this test that an excess of lipase in the blood persists longer than an excess of diastase (Crandall, 1935; Comfort and Osterberg, 1940; Johnson and Bockus, 1940). Yet Lewison (1941) after an extensive clinical trial, using both methods, failed to detect a constant difference in the rates of fall in the levels of the two enzymes. There was a slower fall in lipase values in two of the present series. The lipase test does score over the diastase test when it comes to the question of the diagnosis of the pancreatitis of mumps, because the results of the latter are apt to be vitiated by the alterations in serum diastase which the parotid lesion may occasion. The main objection to the particular lipase test chosen for this comparative study is the 24-hour incubation period required for the complete digestion of the olive-oil emulsion, but now that the balance of favour has swung over towards conservatism in the treatment of acute pancreatitis this delay need not be regarded as a bar to its wider clinical application.

Summary

The relative merits of two serum enzyme tests have been considered.

The blood normally contains enzymes that are active on starch and vegetable oils. Their activity varies from person to person, but is constant for each individual.

The diastase and lipase findings in 10 cases of acute pancreatitis are reported.

It was found that the two tests were equally satisfactory as indicators of acute pancreatitis. Their clinical application seems to be limited to the initial stages of the disease owing to the nature of the specific enzyme reaction. Evidence is given to show that serial diastase estimations may furnish information regarding the grade of severity of the disease.

I am indebted to those of my colleagues in the Western and Royal Infirmaries, Glasgow, who helped in the collection of the clinical material and to the several laboratory assistants for their technical help. Special thanks are due to Prof. C. F. W. Illingworth for his advice and guidance. The expenses of the work were defrayed by the Rankin Trust Fund, University of Glasgow.

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Manchester University Medical School Gazette, which first appeared in June, 1898, has just published a special golden jubilee number. This is handsomely produced and illustrated and includes a number of special articles. Prof. Geoffrey Jefferson, F.R.S., contributes an article on three Manchester pioneers in neurology, James Ross, Sir William Thorburn, and R. T. Williamson. Dr. E. Bosdin Leech briefly recounts the history of the *Gazette*, which appeared originally as the "Manchester Royal Infirmary Students' Gazette," and Dr. A. E. Barclay has an interesting article on the early days of radiology in Manchester. There are in addition the familiar articles on "By-paths of Medical History" over the initials "W.B." and the usual contributions on such subjects as common infections of the hand. This special issue is one which should interest all former students of the Medical School at Manchester.

STREPTOMYCIN DERMATITIS IN NURSES

BY

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Dermatitis affecting nurses who give streptomycin injections has been described in the United States (Strauss and Warring, 1947; Report to Council on Pharmacy and Chemistry, A.M.A., 1947; Rauchwerger *et al.*, 1948). Trials of streptomycin have been conducted at the Brompton Hospital under the Medical Research Council Scheme since January, 1947, but until the last few months we had seen no cases of hypersensitivity in streptomycin handlers. However, dermatitis due to this drug has recently been observed in four nurses. Since the trials began approximately 80 nurses have handled streptomycin for varying periods.

Duration of Contact.—Each of the four affected nurses gave six to 12 injections daily for periods varying from six weeks to six months. The contact was that involved in mixing the streptomycin powder in the ampoule with triple-distilled water, giving the injections, and later washing and cleaning the syringes. There was no previous history of allergy or skin infection in any of these nurses.

Clinical Findings

Oedema and irritation round the eyes occurred in all four cases. In three there was also a rash over the elbow flexures (Fig. 1). This rash was papular, erythematous, and itchy, with accompanying oedema and later vesicle formation. In the fourth case there was a similar rash on the fingers. All four nurses complained of irritation and watering of the eyes. In only one was there conjunctival injection; later a *Staphylococcus aureus* was grown from her conjunctival sac.

In three of the four nurses the skin round the eyes was first affected, while in the fourth the rash appeared on the fingers and involved the eye regions later. In two cases the face also became involved. In the three cases in which

FIG. 1.—Showing streptomycin dermatitis of the elbow flexures.

the rash started round the eyes the left eye was affected first and the skin over the right elbow flexure later. It is possible that the left hand was soiled with streptomycin during the mixing of the drug with distilled water, or in holding the patient's skin during the injection, and then used to rub the left eye, as is natural, and contaminated the right elbow region when the arms were crossed. Two of the nurses said they often sat with bare arms crossed while on night duty during the period of exposure to streptomycin. However, in the only case in which the skin of the fingers was affected no rash appeared in the elbow regions, and in one case the rash appeared over both elbow flexures.

The nurse whose hands were involved was the most severe case. The skin over her fingers became swollen, dry, scaly, and itchy, and deep cracks formed along the creases on the flexor and extensor surfaces. Later her eyes and face became involved.

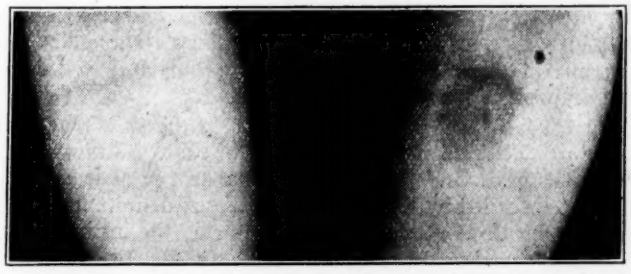

FIG. 2.—Skin test with 50 μg. of streptomycin hydrochloride in 0.1 ml. of normal saline. The streptomycin reaction is shown on the right. A control test with 0.1 ml. of normal saline is shown on the left.

Course.—Three of the nurses noticed that the skin condition improved while they were off duty on holiday or sick-leave and recurred as soon as contact with streptomycin was resumed. In one, the rash reappeared around her eye and elbow after the first day on duty after two weeks' holiday. We found little effect from local applications to the skin areas showing sensitization and poor response to the use of antihistamine drugs so long as contact with streptomycin continued.

In each case there was rapid improvement as soon as the contact with streptomycin was stopped, although the skin of the hands of the most severely affected nurse was not normal even after five weeks off duty.

Investigations

Skin tests were carried out on the four affected nurses by giving an intradermal injection of 50 μg. of streptomycin hydrochloride dissolved in 0.1 ml. of physiological saline, using saline alone as a control. No significant reaction was seen at 10 or 20 minutes after the injection. At 24 hours, three showed a weal of 15 mm. or more in diameter, with a surrounding flare 20 mm. or more in diameter (Fig. 2), and stated that they had first noticed the local reaction three to four hours after the injection; the fourth showed only a flare more than 20 mm. in diameter, and stated that she had first noticed it eleven hours after the injection.

In three of the four cases a general reaction, consisting of increased itching, with or without increase in the rash, occurred at about the same time as the local reaction developed. In the fourth case there was no increase in the itching or in the original rash, but, as the local reaction appeared, fresh reddish macules were noted around the wrists. These disappeared in a few hours, but reappeared when the skin reaction was repeated using 100 μg. of streptomycin.

Thirty nurses in prolonged contact but without symptoms of sensitivity were tested, using 100 μg. of streptomycin, and showed no significant reactions. In six patients treated with streptomycin but with no symptoms suggesting sensitivity to it we found the intradermal test negative before and after treatment.

White blood cell counts were carried out on all four cases. There was no eosinophilia or other abnormality.

*In receipt of a grant from the Medical Research Council.

Discussion

Although none of the cases recorded by Rauchwerger *et al.* had had less than eight months' exposure to streptomycin before they developed skin lesions, Strauss and Warring recorded one case after only one month. In our own cases symptoms developed between six weeks and six months after the exposure to streptomycin began. The sites of the lesions have been much the same in all three series, though our cases are remarkable in that the hands or fingers were affected in only one of the four.

Rauchwerger and his colleagues considered that intradermal tests were more reliable than patch tests and were negative in those not exposed to streptomycin. We also had no positive reactions in the controls.

An exacerbation of the lesions during the skin reaction to the patch test occurred in three out of four of Strauss and Warring's cases and to the intradermal test in at least one of those recorded by Rauchwerger *et al.* A definite flare-up was seen in three of our four cases during the intradermal test, and the development of a rash on the wrist in the fourth case may have been a similar manifestation.

We consider that the occurrence of both local and general reactions in the four nurses on skin testing supports the clinical impression that their skin lesions were due to handling streptomycin.

Prevention.—Nurses and others should be warned to avoid soiling their skin with the powder or solution and instructed to wear rubber gloves when handling streptomycin. They should wash their gloves, hands, and arms thoroughly afterwards. It appears that, even if sensitized, a nurse can continue to work with streptomycin if these precautions are taken (Strauss and Warring, 1947). Skin-sensitivity tests should be done to confirm suspected streptomycin sensitivity and those proved sensitive warned to take full precautions and to inform the doctor of the sensitivity if streptomycin should ever be advised for them as patients.

Summary

Four nurses out of approximately 80 handling streptomycin at Brompton Hospital, London, during a period of 18 months, developed a dermatitis. Their exposure varied from six weeks to six months.

The dermatitis consisted of an itchy papular erythema of the skin round the eyes and over the elbow flexures. In only one nurse were the hands involved.

Skin-sensitivity tests, using 50 μg. of streptomycin in 0.1 ml. of saline, were positive in the four affected nurses but negative in controls.

People handling streptomycin should wear rubber gloves and avoid soiling their skin with the material.

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Specific recommendations for combating malaria on a world-wide scale were drawn up by the Expert Committee on Malaria of the World Health Organization, which met in Washington, D.C., on May 19–25. Its report outlines methods to implement the policy already advanced by the W.H.O. The Committee on Malaria was presided over by Dr. Arnaldo Gebaldon (Venezuela). Among the members who attended were Major-General Sir Gordon Covell (United Kingdom), Dr. Paul F. Russell (U.S.A.), Medical General Marcel Vaucel (France), and Dr. D. K. Viswanathan (India). Dr. Wallace R. Aykroyd officially represented the Food and Agriculture Organization on the committee, and Dr. Emilio Pampana, of the W.H.O., acted as secretary. Attending as observers for the Pan-American Malaria Commission were Dr. Carlos A. Alvarado (Argentina), Dr. Paulo C. A. Antunes (Brazil), and Dr. Luis Vargas (Mexico).

IDIOPATHIC HYPERSPLENISM

REPORT OF A CASE

BY

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Recent work has thrown more light on the functions of the spleen in regulating the levels of the three formed elements in the blood—red cells, white cells, and platelets.

The destructive action of the spleen on the white blood cells is stressed by Wiseman and Doan (1939), who described three cases of chronic neutropenia with oral ulceration associated with splenomegaly. Along with this neutropenia were variable purpura and thrombocytopenia. The bone-marrow, in contrast to the peripheral blood picture, showed a pronounced hyperplasia. Removal of the spleen resulted in a return of the white cell count to normal, and examination of the spleen by supravital methods showed excessive phagocytosis of neutrophils by clasmatocytes. These workers termed this condition chronic splenic neutropenia. Two further cases were described by them in 1942. Similar cases have since been recorded by others. Langston *et al.* (1945) found evidence of excessive phagocytosis in their case, and Muether *et al.* (1941), describing one case, found groups of degenerate white cells lying free in the splenic sinuses. Doan and Wright (1946) consider that a similar splenic effect on platelets is the cause of thrombocytopenic purpura.

A destructive action on the red cells has also been described. Doan and Wright (1946) described two cases of "splenic panhaematopenia" and charted the haematological findings in five others. Panmyeloid hyperplasia was a feature in these cases. Splenectomy resulted in a return of the blood picture to normal. These workers found diffuse endothelial hyperplasia in the splenic sinuses and evidence of excessive sequestration and destruction of red cells, white cells, and platelets in supravitally stained sections of the spleen.

Doan (1945) and Doan and Wright (1946) believe that selective destruction by the spleen of red cells leads to congenital acholuric jaundice, of white cells to chronic splenic neutropenia, and of platelets to thrombocytopenic purpura. These blood elements may be involved singly or in combination.

Similar clinical pictures have been described by others, who, however, have failed to find evidence of excessive splenic destruction of the circulating blood elements. These others believe that the main factor is an inhibitory action of the spleen on the marrow. Singer, Dameshek, and Miller (1941), studying the effect of splenectomy on the blood picture in a variety of conditions, came to the conclusion that the spleen exerts some influence on haemopoiesis.

Rogers and Hall (1945) and Salzer *et al.* (1945), each describing one case of chronic neutropenia relieved by splenectomy, could find no evidence of excessive phagocytosis of granulocytes. Splenomegaly in various other unrelated conditions may also be accompanied by leucopenia. Engelbreth-Holm (1938), in his study of tuberculous splenomegaly, noted the association of anaemia and leucopenia with a hyperplastic marrow which returned to normal after splenectomy. Schousboe (1940) described similar findings in lymphogranulomatosis and syphilitic cirrhosis with splenomegaly and anaemia. These authors suggested a splenic control of the emission of cells from the marrow.

Dameshek and Miller (1946) studied the bone marrow in cases of idiopathic thrombocytopenic purpura before

and after splenectomy. Before splenectomy they found a greatly increased number of megakaryocytes in the marrow. Platelet production was evident in only a small proportion of them compared with normal controls. After splenectomy a high proportion of the megakaryocytes showed platelet production and the platelet count rose. These workers suggested an inhibitory splenic effect on platelet production. This concept might be extended to include an inhibitory effect on other haemopoietic tissues.

It seems evident that an effect on the maturation of the blood cells may be an outstanding feature of this so-called hypersplenism. The following case is presented as an apparent example of this condition.

Case Record

An unmarried dairymaid aged 45 was admitted to Aberdeen Royal Infirmary on Dec. 30, 1946, under the care of Prof. R. S. Aitken. She had enjoyed excellent health until three months before admission, when she began to tire more easily, felt weak, and her skin became yellow. She complained of breathlessness and palpitation on exertion and intermittent oedema of the ankles. Menstruation was scanty. All these symptoms became progressively more severe. In the month before admission she had been receiving large doses of "anahaemin" and other liver extracts without improvement. Past history and family history were not relevant. Her diet had always been satisfactory.

Examination revealed a heavily built woman with a slightly yellowish tint of the skin and sclerae. There was some diffuse brown pigmentation of the backs of the hands, the extensor aspects of the elbows, and the patellar regions. There were a few discrete brown spots on the face, but none was seen inside the mouth. The mucous membranes were pale. The nails were slightly brittle and the hair was coarse. The tongue was normal. The neck veins were distended 2 cm. above the sternal angle, and there was slight oedema over the sacral and pretibial regions. No abnormality was detected in the heart or lungs. The blood pressure was 142/80. The spleen was palpable and firm, two fingerbreadths below the costal margin. The liver edge was not felt. Two small retinal haemorrhages were noted. The urine contained a trace of urobilinogen. Physical examination was otherwise negative. The blood picture was as follows: red cells, 1,030,000 per c.mm.; haemoglobin, 24% (Haldane); colour index, 1.16; reticulocytes, 2.4%; white cells, 2,800 per c.mm. (polymorphs 64%, lymphocytes 19%, monocytes 17%). The red cells showed moderate anisocytosis; there were some macrocytes and microcytes, but most were normal. Red-cell fragility was normal. The platelet count was not done at this time, but later it was found to vary between 147,000 and 205,000 per c.mm. Examination of the sternal marrow by aspiration showed a marked normoblastic hyperplasia: myeloblasts 0.8%, premyelocytes 4.4%, myelocytes (neutrophils 11.2%, eosinophils 2%), metamyelocytes (neutrophils 24%, eosinophils 1.2%), segmented forms (neutrophils 4.8%, eosinophils 0.8%), lymphocytes 7.2%, haemocytoblasts 3.6%, normoblasts 40%. Detailed haematological findings are given in the Table. A fractional test meal showed a normal acid curve. The icterus index was 12. A galactose-tolerance test gave a normal result. Other investigations included blood Wassermann reaction, radiograph of chest and oesophagus, repeated stool examinations for occult blood, blood-sugar curve, fat-balance test, estimations of plasma proteins, serum chlorides, potassium, sodium, and the blood urea. All gave normal or negative results. Full doses of anahaemin by injection and proteolysed liver and iron by mouth for three weeks did not alter the blood picture or produce a significant reticulocyte response (see Table). Blood transfusions were given on Jan. 6, 1947, and again on Feb. 5. The blood count gradually returned to its previous level after each one. The diffuse brown pigmentation appeared to increase slightly, but the patient's general condition remained unchanged.

Splenectomy was carried out on April 3 by Mr. Andrew Fowler. Transfusions of packed cells given before and after operation raised the haemoglobin to 70%. At operation the liver was found to be of normal size; the surface was quite smooth and of normal consistency. There was no thrombosis of the splenic vein. Convalescence was uneventful and the patient was discharged home on April 18.

On Dec. 10 (eight months after operation) she was well and was undertaking moderately heavy farm work. The blood picture showed: red cells 3,380,000 per c.mm.; Hb, 76%; C.I., 1.12; reticulocytes, 2.8%; white cells, 5,700 per c.mm.; platelets, 485,000 per c.mm. The red cells showed some anisocytosis, some macrocytosis and hypochromia. A few Howell–Jolly bodies were present.

The patient was seen again on April 7, 1948, when she was feeling very well and was undertaking normal work. Blood examination showed: Hb, 98% (Haldane); red cells, 4,460,000 per c.mm.; C.I., 1.1; reticulocytes, less than 1%; white cells, 7,800 per c.mm.; platelets, 347,500 per c.mm. Examination of the film showed slight but definite macrocytosis with numerous Howell–Jolly bodies.

Pathological Report on the Spleen (Dr. W. M. Davidson).—The spleen weighs 470 g. and is therefore some three times the normal weight. It has a firm consistency and a deeply congested cut surface, flecked with prominent glassy nodules about 1 mm. in diameter. These are regularly distributed and represent Malpighian corpuscles. Microscopically there are only two features of note: the very active germ centres in the Malpighian corpuscles and the presence of a moderate amount of iron pigment. Erythrophagocytosis and haemopoiesis are not features. The splenic findings are not typical of a haemolytic anaemia of the acholuric type.

Discussion

The diagnosis in this case presented many difficulties. The presence of gross anaemia in the absence of gastro-intestinal bleeding and the apparently normal liver at operation were against Banti's syndrome. As liver biopsy was not carried out it is not known whether it was histologically normal, but microscopically the spleen did not suggest congestive splenomegaly.

Acquired haemolytic anaemia was another possible diagnosis. Although studies of the haemolysin content of the blood were not made, it was thought that a haemolytic process severe enough to reduce the haemoglobin to 24% would result in a high reticulocyte count. The association of a hyperplastic marrow with a reticulocyte count which was only slightly raised did not seem compatible with this diagnosis, and the spleen did not show the microscopical appearances of haemolytic icterus. Also, apart from a trace of urobilinogen in the urine and a slightly raised icterus index, there was no evidence of a high rate of blood destruction.

Haematological Findings

Date:	31/12/46	3/1/47	15/1	30/1	9/2	28/2	6/3	19/3	31/3	3/4	SPLENECTOMY	4/4	9/4	8/5	30/5	18/6	20/8	10/12
R.B.C. millions/c.mm.	1·03	1·37	1·62	1·20	2·80	2·37	2·37	2·0	1·62	3·10		—	—	3·10	2·90	2·84	3·20	3·38
Hb % (Haldane) ..	24	28	36	30	58	46	48	40	36	64		74	78	70	70	68	80	76
Reticulocytes % ..	2·4	9·5	5·5	4·7	2·5	—	4·7	—	4·5			5·7	0·5	5	3·5	2·3	<1%	2·8
Platelets/c.mm. ..				162,500	205,000					147,500		280,000	350,000	515,000	405,000	375,000	307,000	485,000
W.B.C./c.mm. ..	2,800		1,700	2,400	3,400				3,400	9,600		14,400	3,400	7,400	5,700	13,800	5,000	5,700
Neutrophils % ..	64		56											64	37	37		
Lymphocytes % ..	17		34											24	40	44		
Mononuclears % ..	17		8											11	23	18		

Blood transfusions were given: 1 pint (568 ml.) whole blood on Jan. 6, 2 pints (1,136 ml.) of packed cells on Feb. 5, 2 pints packed cells and 2 pints whole blood on April 3–4. Full doses of liver extract by injection and proteolysed liver and iron by mouth were given from Dec. 31, 1946, to Jan. 24, 1947.

Haemochromatosis with pigmentation may result in refractory anaemia (Bomford and Rhoads, 1941). No other features of this condition could be demonstrated, and injection of a weak solution of potassium ferricyanide and hydrochloric acid into the skin (Fishback, 1939) produced no iron reaction.

On the evidence available it is difficult to be dogmatic on the aetiology of this condition. The association of a normoblastic marrow with macrocytes in the circulating blood suggested a defect in maturation, in that haemoglobinization of immature normoblasts was occurring. It is of interest to note that a degree of macrocytosis was still present after splenectomy. This indicates that splenectomy has not resulted in a complete return of maturation to normal. The improvement in the blood picture after splenectomy suggests, however, that the spleen was at least partially responsible. This fact seems definite, but any other deduction would be speculative.

It has not been possible in the above case to demonstrate the excessive destruction in the spleen of formed elements which Doan and Wright (1946) and other workers stress. The evidence here supports those who hold that the spleen in such cases exerts an inhibitory effect on maturation. There may, however, have been some increased destruction of abnormal formed elements.

Whatever the cause, removal of the spleen resulted in a great improvement in the blood picture and in the patient's general condition, although it did not result in complete haematological recovery. It enabled a woman with an anaemia so gross as to render her a bedridden invalid, with oedema, and with a 2-cm. congestion of her neck veins to lead an active life. In view of the beneficial effects of splenectomy it is important that cases of this type be recognized.

A suitable name for this condition is difficult to choose. American workers have used such terms as "splenic panhaematopenia" and "idiopathic hypersplenism." Until the cause has been defined the latter seems suitable. Unfortunately the simple term "splenic anaemia" is inappropriate because of its association with Banti's syndrome.

Summary

A case is described of gross anaemia, leucopenia, and splenomegaly associated with a normoblastic marrow picture.

Splenectomy partially relieved the condition.

The pathogenesis is discussed but no definite conclusion is reached.

I wish to thank Prof. R. S. Aitken for permission to record this case, Dr. H. W. Fullerton and Prof. A. Kekwick for much helpful advice and criticism, and Dr. W. M. Davidson for the pathological report.

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A draft regulation has been made by the Minister of Health extending the superannuation benefits open to mental-health officers to regional psychiatrists employed by Regional Hospital Boards.

PEPTIC ULCER DURING PREGNANCY

WITH A REPORT OF A CASE OF PERFORATION

BY

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Although complaints of indigestion are common among expectant mothers the association of peptic ulcer with pregnancy is believed to be most unusual. During the period 1928–37 Sandweiss *et al.* (1943) discovered only one case of proved duodenal ulcer in 70,310 pregnancies collected from five hospitals in Detroit. Over a similar period in New York City one case of gastric ulcer was reported from 348,310 pregnancies. Both cases resulted in death from perforation. Avery Jones (1947) stated that no case of proved peptic ulcer was discovered among 10,000 pregnancies at the antenatal clinic of the Central Middlesex Hospital even in the few cases referred to the dietetic clinic for indigestion.

In view of the almost universal association of digestive disturbances with pregnancy it is not surprising that activity in an unsuspected ulcer is often overlooked until perforation has occurred. Nevertheless the above figures show that it must be extremely rare to meet with this complication. Scott (1945), discussing the differential diagnosis of acute abdominal lesions in pregnancy, does not even mention ulcer perforation as a possibility, although appendicitis, intestinal obstruction, and gall-bladder disease receive full consideration.

The following case, in which perforation of a duodenal ulcer occurred at the 36th week of pregnancy, is reported partly because it is so rare and partly because it affords an opportunity of reviewing the effects of pregnancy upon peptic ulcer in general.

Case History

A primipara aged 24, at the 36th week of pregnancy, was admitted to the North Herts and South Beds Hospital on Aug. 20, 1947, complaining of acute abdominal pain. Four years previously she had been treated in hospital for a duodenal ulcer, and this had been confirmed by an *x*-ray examination. She had not suffered from any other illness, and did not show any signs of masculine endocrine characteristics. The significance of this is referred to in the commentary below. During her pregnancy she had had two severe attacks of indigestion relieved by alkalis. A third attack began a few days before admission, and she finally collapsed with a very severe pain in the epigastrium.

When first seen, eight hours after the onset of the acute pain, she complained of continuous pain all over the abdomen and had vomited twice. Her temperature was 100° F. (37.8° C.) and her pulse rate 84. The size of the uterus corresponded with the dates, and it contained a live foetus presenting by the vertex. There were no signs of toxaemia, but generalized abdominal tenderness and some rigidity were present in the right side of the epigastrium. No peristalsis could be heard.

Having excluded the possible causes of pain due to the pregnancy, the diagnosis appeared to rest between a perforated duodenal ulcer and a perforated appendix displaced upwards by the enlarged uterus.

Laparotomy was performed ten hours after the onset of the acute pain. A high paramedian incision was made and free fluid was encountered. A small perforation about 4 mm. in diameter was found on the anterior surface of the duodenum. This was closed and a small portion of omentum sutured over it. A brief search for the appendix served only to show the extreme difficulty of locating this organ late in pregnancy, and in order not to disturb the uterus, the surface of which was

already red and injected, the attempt was abandoned. The abdomen was then closed without drainage.

Next day she was much better. Morphine and progesterone were given daily in an attempt to postpone labour, but four days after the operation labour started, and she was delivered spontaneously of a living child weighing 6 lb. (2.7 kg.) after an easy labour lasting 17 hours. She did not complain unduly of any discomfort in the abdominal wound. Her subsequent progress was uneventful. A test meal in the puerperium revealed marked hyperchlorhydria, and a barium meal six weeks after the operation showed that the ulcer was still active and there was some delay in emptying. She was discharged to continue medical treatment, but further surgical measures may be necessary at some future date.

Commentary

This case must be regarded as an exception, for a proved duodenal ulcer was aggravated during pregnancy and perforated at the 36th week. The diagnosis was not difficult once it was realized that an ulcer had existed before pregnancy. A perforated appendix could not, however, be entirely excluded, and for this reason treatment by continuous suction was rejected.

There appears to be no reason why pregnancy should predispose to perforation in the rare cases of active ulceration, but it is possible, in the case of a duodenal ulcer, that rearrangement of the viscera with traction on the mesentery by the enlarging uterus could lead to duodenal ileus. Hurst and Stewart (1929), however, describe the rising uterus supporting the stomach as one of the main reasons for the favourable influence of pregnancy upon the symptoms of ulcer.

The reason for this apparently beneficial effect of pregnancy upon peptic ulcer is not altogether clear. Hurst's explanation was given before the significance of endocrines in pregnancy was appreciated; and while the support of the uterus might benefit a gastric ulcer in the long type of stomach it is difficult to see how it could help a duodenal ulcer in the short high stomach. Two other factors are probably involved: (1) the physiological atony which is believed to occur in the smooth muscle of the alimentary canal during pregnancy—it is even possible that the stomach may pass through similar phases of alteration in tone comparable to those which are known to occur in the ureter; (2) the hypochlorhydria which is so often found during pregnancy.

Way (1945) has investigated the relation between gastric acidity in pregnancy and the presence of gonadotrophic hormone in the urine. His results suggest that the secretion of acid varies inversely with the concentration of gonadotrophic hormone present at the same time in the urine. These two factors, probably controlled by the endocrine system, might operate together to alter favourably for the duration of pregnancy two of the adverse conditions so often present in the ulcer diathesis—viz., hypermotility and hyperacidity.

It is well known that 80–90% of all peptic ulcers in adults occur in men. Differences in mode of living may be partly responsible, but endocrine factors are probably also involved in this very definite sex-incidence. Bockus (1944) suggests a direct relation between pituitary hormones and peptic ulcer apart from pregnancy. He quotes the following evidence as suggestive, but it is still unproved: (1) Pituitary hormones and urinary extracts have prevented experimental ulcer in animals; (2) the occasional occurrence of polyuria in ulcer patients; (3) many female patients with peptic ulcer show masculine endocrine characteristics.

If it could be proved that pituitary hormones are able to reduce the secretion and motility of the stomach a new method of treatment might be established to rival the popularity of vagal resection. The beneficial effects of pregnancy upon peptic ulcer are therefore worth considering if only to see whether the conditions could be reproduced in the non-pregnant state.

In actual practice the obstetrician faced with the rare association of peptic ulcer and pregnancy need only remember two things; first, to survey the case from the endocrine point of view to exclude masculine characteristics suggesting an android pelvis and possible dystocia; and, secondly, to pay serious attention to any symptoms of indigestion that may occur during the pregnancy.

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APLASTIC ANAEMIA IN SIMMONDS'S DISEASE

REPORT OF A CASE

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The part that the pituitary gland plays in erythropoiesis is uncertain, and although disease of the pituitary may be associated with anaemia its mode of action is unknown. In his review of Simmonds's disease Sheehan (1939) found that there was nearly always a moderate anaemia and that this anaemia is usually hypochromic in the early stages. After many years the hypochromic anaemia may give rise to the hyperchromic variety, and according to Sheehan these hyperchromic anaemias are most often seen in cases in which there is a severe hypothyroid element. Escamilla and Lisser (1942), in their review of 101 typical verified cases, found that in those cases in which relevant data were given the average haemoglobin was 65% (minimum 40%) and the average red blood cell count 3,710,000 (minimum 2,000,000). It is not stated what type of anaemia was present. Snapper *et al.* (1937), describing cases of pituitary and gonadal deficiency, suggest that insufficiency of the anterior lobe of the pituitary may be followed by achlorhydria and that this achlorhydria may induce anaemia after a long interval. The anaemia may be identical with that in pernicious anaemia (Witts, 1942), and in these cases it responds to liver therapy as anticipated. They suggest that anaemia is absent in cases of Simmonds's disease of short duration because the anaemia occurs only after the achlorhydria has been present for a considerable time. However, Simmonds's disease is commonly associated with both hypothyroidism and hypogonadism, and either of these conditions in itself may be responsible for an anaemia. Bomford (1938) and Jones (1940) have described hypoplasia of the bone marrow in hypothyroidism, while recently Watkinson *et al.* (1947), describing two cases of hypopituitarism and hypogonadism, conclude that the long-standing hypogonadism may be responsible for the observed hypocellular bone marrow.

However, although Simmonds's disease may be associated with anaemia, no reference to an associated aplastic anaemia can be found in the literature. In the case to be described a patient with Simmonds's disease of twenty years' duration was admitted with aplastic anaemia, and in view of this complication a report on the clinical and pathological findings may be of interest.

Case Record

A woman aged 45 was admitted in a comatose state on June 26, 1947, and died four days later. The following history was obtained from her mother and husband.

The patient had one daughter, now aged 20. The delivery was a difficult one, and forceps were applied, but there was no clear history of post-partum haemorrhage. She was unable to feed the infant because the "milk dried up." Although before the pregnancy both menstruation and libido had been normal, there was absolute amenorrhoea and complete loss of libido after the birth of this child. Both witnesses observed a marked change in the patient's personality at this stage, for whereas previously she had been active and cheerful she now became too tired to do much, unenterprising, and uncommunicative. She showed an unnatural lack of interest in her daughter and her surroundings, and in later years hardly left the house. Her appetite had been poor, and on occasion she had bouts of vomiting. There was no convincing history of sensitivity to cold. For the last year she complained that her eyes were "funny," but nothing more precise. Eight months ago she had some teeth extracted because they were "septic." Three months ago her gums began to bleed and she was confined to bed. She had never taken medicine, apart from an occasional aspirin, until she was first seen by a doctor some few days before admission.

On admission the patient looked considerably older than her age—in fact, older than her mother. Her complexion was pale and waxy, with a faint malar flush. Her skin was not noticeably dry, but her hair was greying, scanty, and brittle. Her eyebrows were thin and there was an almost complete absence of pubic and axillary hair. Her nutritional state was moderately good and her breasts were not obviously atrophic. There was dried blood round the mouth, and the gum margins were ulcerated and bleeding; many teeth were missing and there were ulcers inside the mouth. She was in a comatose state, but could be roused to obey simple commands. Temperature, 103.6° F. (39.8° C.); pulse, 116; $B.P._{.}$ 100/68, early systolic blowing murmur in all areas. No petechiae present on the skin. No abnormalities were found in the chest, abdomen, or central nervous system.

Investigations

Peripheral blood and sternal marrow examinations were made on June 27 by Dr. Mohun. The blood count showed: red cells, 1,130,000 per c.mm.; Hb, 25% (3.4 g.); C.I., 1.1; white cells, 1,800 per c.mm. (polymorphs 19%, lymphocytes 77%, large mononuclears 4%); packed cell volume, 12%; mean corpuscular volume, 106 c. μ; mean corpuscular haemoglobin concentration, 29%. Moderate anisocytosis.

The total nucleated cell count of the sternal marrow was indistinguishable from that of peripheral blood—approximately 2,000 per c.mm. Prolonged search of the smears showed extremely few nucleated cells; of these approximately half were lymphocytes, and the remainder consisted of occasional neutrophil polymorphs and intermediate and late normoblasts. The marrow in the sternum was aplastic.

The blood chemistry (June 30) was as follows: Fasting sugar, 64 mg.; cholesterol, 114 mg.; urea, 120 mg. per 100 ml.; Wassermann and Kahn reactions, negative.

Treatment and Progress

Blood was transfused by slow drip; in all she received 2,160 ml. of cross-matched Group A blood. She was also given 50,000 units of penicillin every three hours, 5 mg. of desoxycortone acetate daily, and 1,000 mg. of ascorbic acid intravenously. Glucose drinks were given by mouth.

Her temperature fell slowly almost to normal, but her general condition steadily deteriorated, with deepening coma and a fall in blood pressure. She was incontinent of urine, but appeared to pass adequate quantities. Her blood picture on June 30, after transfusion of 1,080 ml. of blood, was: red cells, 2,610,000; Hb, 56% (7.7 g.); C.I., 1.1; white cells, 800 per c.mm. (polymorphs 50%, lymphocytes 50%). No nucleated red cells were seen.

The patient died on July 1.

Pathological Report

Summary of Necropsy (No. 3126/47). Simmonds's Disease: Haemorrhage Cyst of Pituitary: Aplastic Anaemia.—Moderate atrophy of heart. Moderate thickening and fibrosis of cusps and shortening and thickening of chordae tendineae of mitral valve; probably slight old rheumatic endocarditis. Slight atheroma of aorta and coronary arteries. Congestion and emphysema of lungs. Focal lymphocytic infiltration and slight septal fibrosis of slightly atrophied thyroid. Parathyroids not enlarged. Oedema and anaemia of liver, with slight fatty change; free iron in some Kupffer cells. Slight myeloid reaction and iron pigmentation in firm congested spleen, enlarged to about twice the normal size. Oedema of kidneys. No abnormality in pancreas, stomach, and intestines. Fibrosis of rather small ovaries. Pale, smooth, atrophic endometrium lining atrophied fibrotic uterus. Hair of head thin and greyish; eyebrows scanty; axillary and pubic hair almost completely absent. A moderately well-nourished woman. The pituitary fossa was occupied by a cyst measuring 2.5 × 2 × 2 cm., which pressed on and indented the base of the brain; the optic chiasma was stretched over the surface of the tumour. The sella turcica was widened and the clinoid processes were reduced in size, but there was no erosion of the bone. On sagittal section the wall of the cyst was 0.3 cm. thick and was distended with recent and altered blood. The adrenals were very small and reduced to almost wafer thinness. The larger measured 2.5 cm. long by up to 0.3 cm. thick, and the maximum thickness of the cortex was 0.2 cm. The sternum contained fatty marrow; there were two small haemorrhagic areas at the upper end in relation to the site of a sternal puncture. The marrow throughout the femur was deep red and haemorrhagic.

Microscopical Examination.—Sections of the pituitary cyst, thyroid, adrenals, ovary, uterus, liver, spleen, kidney, lung, myocardium, mitral valve, vertebra, and the marrow from the sternum and upper end and middle of the femur were fixed in 4% saline-formaldehyde, imbedded in paraffin, and stained with Ehrlich's haematoxylin and eosin and with iron haematoxylin and Van Gieson's mixture. The pituitary cyst, liver, and spleen were also stained to demonstrate ferric iron. Sections of the pituitary cyst showed a dense hyaline fibrous wall lined with recent and old organizing blood clot in which cholesterol crystal clefts and a few areas of foreign-body giant cells were present. There was some chronic inflammatory reaction with deposition of free iron and areas of ectopic osteoid tissue in the cyst wall. A little residual anterior-lobe glandular tissue, composed chiefly of chromophobe cells, was present on the outer aspect of the wall, in one place with recent haemorrhage into it, and adjacent to it was part of the posterior lobe, which appeared quite normal. The adrenals showed fibrous thickening of the capsule and slight trabecular fibrosis of the cortical tissue, which was composed of groups of polyhydral cells and showed no differentiation into the normal zones. The medullary tissue was degenerate; the cells stained poorly and their outlines were indistinct. The sternal marrow was almost completely aplastic, consisting of a few scattered primitive haemopoietic cells in fatty tissue. The marrow from the femur and vertebra was aplastic, being composed mainly of fat; scanty small foci of normoblastic and occasionally megaloblastic erythropoiesis and a few groups of haematocytoblasts were present; leucopoiesis was almost entirely absent. The marrow in these last two sites was extensively infiltrated with recent haemorrhage, to which its deep-red appearance was evidently due.

Comment

The onset of Simmonds's disease is usually related to pregnancy, often associated with excessive haemorrhage. The usual pathological finding in these cases is fibrosis and

atrophy of the anterior lobe of the pituitary as a result of necrosis due to thrombosis.

Apart from cystic degeneration in tumours and those arising in association with cranio-pharyngiomata, cysts of the pituitary large enough to cause pathological symptoms are rare, though small cysts arising in the tubules of the pars intermedia are not uncommon. An unusual feature of this case was the almost complete destruction of the anterior lobe by a haemorrhagic cyst. In view of the definite history of the onset of symptoms dating from the time of a difficult labour there can be little doubt that the pituitary destruction was related to the delivery.

It is difficult to see how haemorrhage alone could cause such a well-defined and circumscribed cyst, and a haemorrhage large enough to produce it would almost certainly have at the time of its occurrence caused severe optic chiasma pressure signs, of which there is no record. It is probable that the cyst was present before the pregnancy, causing some pressure atrophy of the anterior lobe, and that necrosis of this occurred at the time of delivery. There had undoubtedly been haemorrhage into the cyst on occasion; one of these was recent, but fibrosis and organization were too advanced to allow of any estimate of when others occurred. These changes also obliterated any evidence of the exact nature of the cyst.

Complete destruction of the anterior lobe seldom if ever occurs in Simmonds's disease (Sheehan, 1939) and the residual anterior-lobe tissue is usually composed mainly of chromophobe cells as in this case. The recent haemorrhage into this area may well have played a part in the patient's death. This haemorrhage, as also the other recent haemorrhages from gums and into the vertebral and femoral marrow, may have been secondary to the aplastic anaemia.

Cause of the Aplastic Anaemia

The association of the marrow aplasia with Simmonds's disease may be fortuitous, but in view of the absence of any other likely cause, and knowing that Simmonds's disease gives rise to anaemia, it seems reasonable to assume that the long-standing pituitary damage in this case resulted in the aplastic anaemia. It is known that pituitary hypofunction can give rise to a gastrogenic pernicious anaemia, and the aplastic anaemia may be the end-result of such a condition: unfortunately we have no knowledge of the previous state of the blood or whether achlorhydria existed. In this case, apart from the reduced size of the thyroid gland, there was little microscopical evidence of severe atrophy and the acini showed normal colloid formation. It seems unlikely, therefore, that thyroid hypofunction could have been responsible for the marrow hypoplasia. There was atrophy of the adrenals and the ovaries, but, so long as such uncertainty exists regarding the action of the endocrines on haemopoiesis, cases such as this can only give rise to speculation.

Our thanks are due to Dr. C. D. Coyle, medical superintendent of the Archway group of hospitals, for permission to use the clinical notes; and to Dr. Mohun, senior assistant pathologist, Archway group laboratory, for his co-operation and for providing the reports on the haematology and biochemical findings. We also wish to thank Dr. A. B. Bratton and Prof. H. L. Sheehan for their helpful criticism.

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Medical Memoranda

Typhoid Meningitis

A male Chinese aged 25 years was brought into Klang Hospital, Malaya, at 10.30 a.m. on Aug. 9, 1946, complaining of severe headache and pains over his whole body for ten days before admission. Before July 31, 1946, he felt perfectly well.

CASE HISTORY

On July 31 he felt unwell and developed a fever, severe frontal headache, vomiting, insomnia, and a continual aching sensation throughout his whole body, particularly in his legs. The headache was continuous until admission, and he vomited two or three times a day. His appetite was poor and he lost weight. There was neither diarrhoea nor constipation, and micturition was normal.

On Aug. 8 he found that his eyes were very sore in the light. There were no other symptoms.

Examination revealed a well-built Chinese; he was conscious, and showed no skin rash, jaundice, or other abnormalities. He liked to lie curled up on his left side and disliked light on his eyes. The temperature was 103° F. (39.4° C.), pulse 96, respirations 24. There was no neck stiffness, and Kernig's sign was negative. Clinical examination of the central nervous system, chest, and heart revealed nothing abnormal except the photophobia. Loss of weight was evident in both thighs. There was no muscle wasting. Abdomen: no masses or engorged veins were present; no tenderness or rigidity; liver and spleen not palpable; nothing abnormal per rectum.

Investigations on Aug. 9.—Blood film: negative for malaria. Blood count: haemoglobin, 70%; W.B.C., 10,000 (polymorphs, 69%; lymphocytes, 30%; monocytes, 1%). Urine: no albumin; no sugar; film negative. It was decided to observe him and repeat blood-film examinations for malaria.

On Aug. 10 his temperature was 103.4° F. (39.7° C.), pulse 92, and respirations 22. Condition unchanged. Blood films negative. On Aug. 11 temperature was 103.6° F. (39.8° C.), pulse 86, and respirations 22. He suddenly became worse about midday, complaining of a sudden and severe increase in the severity of the headache. His vomiting returned and became much worse. He now had neck stiffness, a positive Kernig's sign, and extensor plantar reflex. On lumbar puncture the cerebrospinal fluid was slightly turbid and under pressure. It was sent to the Institute of Medical Research, Kuala Lumpur, for full examination, and in the meantime the case was treated as a meningitis (our own laboratory film revealing pus cells but no organisms).

Penicillin, 100,000 units daily, was given, with sulphathiazole tablets (initial and second doses being 2 g., followed by 1 g. every four hours). As the patient showed no response, this treatment was discontinued on the morning of Aug. 14. In the afternoon of the same day the I.M.R. report was received.

Report from I.M.R.—Smear: moderate number of pus cells and Gram-negative bacilli. Culture: *B. typhosus* isolated in pure culture. Globulin: Nonne-Apelt test positive. Protein: 200 mg. per 100 ml. Chlorides: 680 mg. per 100 ml. Cells: 550, of which 80% are polymorphs.

A sample of blood was taken for Widal and Weil-Felix tests. The result was T 1/480A-O. The Weil-Felix, as expected, was negative. This finding supported a diagnosis of typhoid meningitis.

On Aug. 18 the patient, being treated as a case of typhoid fever, began to improve. On Aug. 31 he developed cystitis and his urine was found to be full of pus cells. This condition disappeared four days later as rapidly as it came.

On Sept. 9 he was much better and complained only of a slight persistent frontal headache. He developed a right facial palsy. His white-cell count was now 11,000 (polymorphs, 73%; lymphocytes, 23%; monocytes, 4%). On Sept. 20 he felt fit except for the right facial palsy, which still persisted. His white-cell count was now 4,500 (polymorphs, 63%; lymphocytes, 32%; monocytes, 3%; eosinophils, 2%).

He was discharged on Sept. 30 fit except for slight facial palsy. Before discharge three consecutive faecal examinations were done, but all were negative.

COMMENT

I have reported this case because true suppurative meningitis due to *B. typhosus* is relatively rare. True, one out of ten patients get meningism in typhoid fever at the onset of the disease, but an actual meningitis is rare. When it does occur, recovery is rarer still, because early involvement of the nervous system, as in this case, is usually an indication that the prognosis is poor.

I should like to thank Dr. R. B. MacGregor, Director of the Medical Services, Malayan Union, for his kind permission to publish this case.

W. E. STUART,
Medical Officer,
Malayan Union.

Reviews

UTERINE CONTRACTION

Uterine Contractility in Pregnancy. A study of the contractions of pregnancy and labour under normal and experimental conditions. By Douglas P. Murphy, M.D., F.A.C.S. (Pp. 134, 64 illustrations. 30s.) Philadelphia and London: J. B. Lippincott Company.

Much of our present knowledge of the action and control of uterine muscle is based on the careful clinical observations of generations of obstetricians. It has thus become established that during early pregnancy the uterus is relatively quiescent and that as term approaches contractions become stronger, more frequent, and more rhythmical, while muscle tone and sensitivity to various stimulants are increased. Regular contractions in the last days of pregnancy are usually followed by efficient action in labour, though almost complete quiescence may precede rapid and easy labour. Uterine inefficiency is sometimes characterized by weak and infrequent contractions, yet forceful contractions do not necessarily imply good uterine function, and rhythm and co-ordination are more important. As regards drugs, morphine has long been held to have a slight depressant action on uterine muscle, but it is also believed to make contractions regular and to reduce spasm, so that its general effect is beneficial. Oxytocin has a variable effect in pregnancy but produces a more constant and strong response as term approaches, and sometimes a violent uterine spasm in labour. Oestrogens under certain conditions appear to improve uterine contractions and sensitivity in late pregnancy and labour.

Observations such as these have from time to time been confirmed by all manner of experimental studies. Dr. D. P. Murphy used Lorand's tocograph for external hysterography, and in this book presents his results and conclusions based on 3,154 tracings taken from 1,153 women. The work could be summarized by saying that in general it confirms all the views stated above, though this would be to underestimate its significance. It is one thing to have a clinical impression, even if others share it, and another to have it elaborated and worked out in detail by scientific recording and experiment. From his results Dr. Murphy has been able to develop many points both of academic and practical importance. Thus he indicates how to estimate during pregnancy the likely behaviour of the uterus in labour, how to distinguish the different types of inertia, and when, if ever, it is safe to administer oxytocin. A few of his findings are at variance with clinical impressions, a notable example being the observation that an occipito-posterior position of the foetus does not influence uterine action nor is it itself influenced by it. The whole book is a record of long and painstaking research into a phenomenon which is difficult to understand and to study. The author does not claim to have solved all the problems, but he has certainly helped to consolidate knowledge in some places and to advance it in others.

T. N. A. JEFFCOATE.

STRUCTURE OF CHILD'S LUNG

The Child's Lung. Developmental Anatomy, Physiology and Pathology. By Stegan Engel, M.D. (Pp. 332; 283 figures. 40s.) London: Edward Arnold and Co. 1947.

The author of this book tries to cover a very large field, discussing in turn the anatomy, histology, and pathology of the bronchial tree, of the bronchial glands, and of the lung, with a short section on his personal views on the pneumonias, and some remarks about tuberculosis in infants and young children. The approach throughout is that of the morbid anatomist, and the book is obviously based on long and painstaking anatomical and histological studies. Many passages, however, are unjustifiably didactic and others are vague and woolly. The short Chapter 6 on the general pathology of the bronchial tree is quite uninformative. On p. 60, in a discussion on the "proliferative bronchiolitis," the author postulates that this condition is due to an unknown agent. He then compares this unknown agent with the hypothetical agent causing malignant changes in epithelial cells, and he advances the suggestion, which is unrelated to the general theme of the book, that the increase recently evident in the number of cases of carcinoma of the bronchus may be due to the influenza epidemic of 1918. On p. 62 there is the extraordinary statement that proliferated basal cells of the epithelium in bronchiolitis are vascularized and transformed into connective tissue, bronchiolitis obliterans thus arising.

On p. 45 Macklin is misquoted in the following passage: "C. C. Macklin points out that the muscle not only narrows the bronchioles but also elongates them in contraction, whilst they shorten by relaxation." Macklin's own statement on this point (*Physiol. Rev.*, 1929, **9**, 1) is that the available evidence "points indubitably to an inspiratory dilatation with lengthening and to an expiratory constriction with shortening"; he suggests further that the contraction of the bronchial muscle would undoubtedly narrow and shorten the bronchus and that the likening of its action to that of "a lazy tongs" is not appropriate.

The author proposes several changes in accepted nomenclature. In order to save his hypothesis that bronchi can be distinguished by their position in the interstitial tissue of the lung, whereas bronchioles are in direct contact with alveolar tissue, he introduces an intermediate type of tube which he calls "broncholi." He classifies pneumonia in infancy as unifocal, dystelectatic-paravertebral, and multifocal. Although in the course of this discussion the author often refers to radiographic appearances, he makes no reference to recent studies of the segmental anatomy of the broncho-pulmonary tree, which have an important bearing on the interpretation of the radiological appearances of all forms of pneumonia. The reviewer considers that any classification of the pneumonias which pays no heed to bacteriology must be regarded as inadequate and unlikely to be helpful; the only reference the author makes to bacteriology in the course of his discussion of the pneumonias is one short sentence starting with the surprising statement that "the discovery of the infecting agent by Fraenkel did not help very much."

If the author had presented without speculative theorizing and authoritarian statement the facts patiently accumulated in his anatomical studies, and if he had referred more adequately to the work of others, the book would have been much improved. The studies of the post-natal development of the child's lung and of the anatomy of the bronchial glands are especially interesting. The author made many careful reconstructions of the terminal parts of the bronchial tree from camera-lucida tracings of serial sections; it is interesting to note that in these no evidence of alveolar pores was found in the child's lung. As it stands the book gives an impression of rather uncritical assiduity. It will be of value to the expert, who can distinguish between fact and fancy, for the concrete observations which it contains; it cannot be recommended to others.

J. G. SCADDING.

THE UNWANTED CHILD

The Psychology of the Unwanted Child. By Agatha H. Bowley, Ph.D. Foreword by S. Clement Brown, M.A. (Pp. 112. 6s.) Edinburgh: E. and S. Livingstone. 1947.

There is general agreement in the books appearing in the wake of the Curtis Report that a substitute home must supply "affection and personal interest . . . stability . . . opportunity . . . and a share in the common life of a small group in a homely environment." The difference between the books lies in the method and the clarity of presentation. The author of this book uses simple, clear, and in the main non-technical language; when jargon appears it often spoils by being inaccurate. For instance, in a helpful last chapter there appears the following comment on swearing and the use of vulgar language: "It is a form of *oral* aggression, just as soiling was a form of *anal* aggression." Surely such information is of no use whatever for ordinary people, and for the psychologist there is no reason why swearing should be oral rather than anal. If theory must be introduced, then the concept of the unconscious must come in with it, and much more should be made of the relation of fantasy to the unconscious instinctual life.

In Miss Bowley's practical work as a psychologist she has made considerable use of Raven's controlled projection test, in which the interview with the child is systematized without being made inhuman. While the child is drawing he is asked to help tell a story, and in this way he expresses his conscious joys, fears, hopes, imaginings, and his remembered dreams. Those in charge of a group of children who read this book may wonder at the relatively superficial picture that tests give, and the author might have included an explanation that psychologists do tests for the purposes of research and teaching and the presentation of material, and that these things have value as well as the actual care of the children. The glossary needs to be rewritten. For example: "Guilt feeling—a technical psychological term indicating a sense of shame which is largely repressed." Either guilt feeling means something quite evident, or else it means repressed guilt, or guilt in respect of repressed ideas or feelings. The word shame simply waters the concept down without adding anything useful. Again: "Psychiatric, the art of healing the mind," and "Prophylactic—preventative." If preventative (or preferably preventive) is clearer, why not use it in the text? "Oral—relating to the mouth, anal—relating to the anus." This explanation is quite useless unless the whole theory of erogenous zones is presented. And so on. Such criticisms do not, however, detract from the value of this and all books written to gather together and present the results of a piece of field work

D. W. WINNICOTT.

DISEASES OF THE BREAST

Diseases of the Breast. By Sir Crisp English, K.C.M.G., F.R.C.S. (Pp. 128. 8s. 6d.) London: J. and A. Churchill, Ltd. 1948.

This is a plain straightforward account of most of the conditions affecting the breast. It is of course impossible within the compass of 128 pages to give anything like a full account of diseases of the breast, but the author has wisely put due emphasis on the more serious lesions. Nevertheless he has to a certain extent been handicapped by two limitations—the absence of illustrations and the failure to draw more freely upon his own great experience. A good illustration may teach more surely and more quickly than a long description, particularly when discussing affections of the breast. A few well-chosen pictures would greatly enhance the book's usefulness. The author gives many references, but we could spare some of them for an account from his ripe experience of personal cases or statistical results. However, it will no doubt be possible to remedy both these defects in a future edition.

ZACHARY COPE.

YOUNG WOMEN

The Childbearing Years. By C. Scott Russell, M.A., F.R.C.S.Ed., M.R.C.O.G. Drawings by Miss M. McLarty. (Pp. 88; illustrated. 7s. 6d.) Oxford: Blackwell Scientific Medical Publications. 1947.

In the words of the preface, the theme of this book is "the process by which women conceive and bear children; its variations and some of the harmonies and disharmonies linked to this process." It was written because the author "felt that young women needed a book about themselves." There are chapters on anatomy, menstruation, normal pregnancy and childbirth, disordered function in pregnancy and labour, sterility, abortion, and disorders in middle age. A mere enumeration of the subjects discussed conveys, however, little idea of the quality and interest of the contents. The author has an enviable gift of readable exposition and omits to consider none of the necessary facts, illustrating them from personal experiences and with accounts from medical history of the Dionne quintuplets, anaesthesia, puerperal fever, the first ovariotomy by the father of abdominal surgery, and others that make the whole into an interesting story. Seldom indeed has the reviewer read a book of its kind that can be recommended more unreservedly. Every young woman should read it. To alter slightly the modest concluding sentence of the preface, while the book is primarily for those between 17 and 30, parents, teachers, and others will find it both interesting and of value

F. J. BROWNE.

BOOKS RECEIVED

[*Review is not precluded by notice here of books recently received*]

Breast Feeding. By F. Charlotte Naish, B.A., M.B., B.Ch. (Pp. 151. 10s. 6d.) London: Geoffrey Cumberlege. 1948.

Accorded the B.M.A. Sir Charles Hastings Clinical Essay Prize

Major Endocrine Disorders. By S. Leonard Simpson, M.A., M.D., F.R.C.P. 2nd ed. (Pp. 552. 42s.) London: Oxford University Press. 1948.

This edition has been largely rewritten and references are now included.

Anatomy. By A. D. Le Vay, M.S., F.R.C.S. (Pp. 299. 4s. 6d.) London: English Universities Press. 1948.

A simple introduction to human anatomy

L'Exploration Fonctionnelle des Reins. By Jules Cottet. (Pp. 207. 400 francs.) Paris: L'Expansion Scientifique Française. 1948.

On the estimation of renal function in clinical practice

Modern Trends in Diagnostic Radiology. Edited by J. W. McLaren, M.A., M.R.C.S., L.R.C.P., D.M.R.E. (Pp. 464. 60s.) London: Butterworth. 1948

Chapters by various authorities on modern radiology.

Médecine de L'Aviation. By J. Malmejac. (Pp. 333. 1,200 francs.) Paris: Masson. 1948.

The physiological and medical aspects of flying, with extensive bibliography.

Truby King. By Mary King. (Pp. 355. 18s.) London: Allen. 1948.

A biography

The Sulfonamides and Allied Compounds. By Elmore H. Northey. Ph.D. (Pp. 660. 75s.) London: Chapman and Hall. 1948.

A monograph on the chemistry and pharmacology of the sulphonamides.

Cardiovascular Diseases. By David Scherf, M.D., F.A.C.P., and Linn J. Boyd, M.D., F.A.C.P. 2nd ed. (Pp. 743. 63s.) London: Heinemann. 1948.

A manual of diagnosis and treatment, with references

A Manual of Practical Obstetrics. By O'Donel Browne, M.B., M.A.O., M.A., Litt.D., F.R.C.P.I., F.R.C.O.G. 2nd ed. (Pp. 267. 35s.) London: Simpkin, Marshall. 1948.

Intended for the student and general practitioner.

Curative Education. By Isabel Newitt. (Pp. 83. 2s. 6d.) London: Anthroposophical Publishing Co. 1942.

The education of backward and abnormal children based on the teachings of Rudolf Steiner.

A Direct Entry to Organic Chemistry. By John Read, F.R.S., Ph.D., M.A., Sc.D. (Pp. 268. 4s. 6d.) London: Methuen. 1948

An account for the intelligent layman.

Recent Advances in Cardiology. By Terence East, M.A., D.M., F.R.C.P., and Curtis Bain, M.C., D.M., F.R.C.P. 4th ed. (Pp. 545. 24s.) London: Churchill. 1948.

The book has been rewritten to incorporate recent knowledge.

One Truth One People. By His Holiness Rajji Maharaj. (Pp. 104. Rs. 3.) Jodhpur: Chain Puri. 1945.

A spiritual approach to world conflicts.

La Isla Iluminada. By J. A. Osorio Lizarazo. (Pp. 205. No price.) Santiago: Editorial el Diario. 1947.

An account of the "enlightened isle," San Domingo

Neurology of the Ocular Muscles. By David G. Cogan, M.D. (Pp. 214. 25s.) Oxford: Blackwell. 1948.

Relates clinical signs to anatomy and physiology.

Lecture Notes on Pharmacology. By J. H. Burn, M.D., F.R.S. (Pp. 128. 6s.) Oxford: Blackwell. 1948.

Intended for medical students.

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THE CAMBRIDGE MEETING

As the two Annual Meetings before the last two wars were held at Aberdeen, it was fitting that the first normal post-war Meeting should again be held at Cambridge after a lapse now of twenty-eight years. Those who planned the Meeting were a short time ago worried lest present pre-occupations with the National Health Service, difficulties of travel by car, food rationing, shortage of accommodation, and a host of other inconveniences would discourage members from attending. The President of the Meeting, Sir Lionel Whitby, who himself did so much preparatory work for it, must have been reassured by the crowds that thronged the reception he gave in the Old Schools on Tuesday, June 29. In the past town and gown have had their differences of opinion, but to-day the old conflicts are but a memory, and Sir Lionel's efforts were energetically backed up by Councillor G. F. Hickson, M.A., the Mayor of Cambridge, who welcomed the B.M.A. on the first day. The task of organizing a large Meeting was difficult enough in the lush days of peace. This year hitches might have been expected, not only because of the obvious hindrances but also because the President and his helpers from the Cambridge and Huntingdon Branch had not had the opportunity of being coached at the Meeting normally held the previous year. But many with long experience of Meetings commented on the remarkably efficient organization of this the 116th Annual Meeting of the B.M.A. That it was so successfully conducted, and so happily concluded, was due to the wise leadership, unflagging energy, and unfailing courtesy of Sir Lionel Whitby, who put us still deeper in his debt by delivering in the Senate House on the evening of his reception a Presidential Address that made the occasion an inspiration. In this Address, delivered on the eve of the appointed day for the National Health Service Act, Sir Lionel hoped there would "always be elbow room for a man to work out his own ideas, to be outspoken in criticism and debate, and to be free from unnecessary restrictions, regulations, and regimentation." "Let us hope also," he added, "that men may still be inspired to undertake work for the love of it." These were suitable words to be addressed to men and women meeting in a university which has for centuries enabled men of genius to follow the argument wherever it should lead.

During the eight days between June 25 and July 2 the familiar pattern of an Annual Meeting was followed—a pattern which now almost has the quality of a ritual. The first three and a half days were taken up with the debates of the Annual Representative Meeting. These concluded, the Annual General Meeting was held, and the retiring President, Sir Hugh Lett, invested Sir Lionel Whitby with the Presidential Badge of Office, prefacing this act with a delightful speech in which he informed the Meeting of some of the outstanding facts in their new President's career. The Meeting, too, was told that the President for next year is to be Dr. C. W. Curtis Bain, physician to the Harrogate General Hospital. This concluded the business on Tuesday—a day given to the principal ceremonies which divide the business from the scientific side of the eight days' conference. In the afternoon medical men and women in their gowns and robes walked in procession to Great St. Mary's Church for the official religious service. This was followed by the reception at Christ's College held by the Vice-Chancellor, Canon C. E. Raven, to whom the Meeting was indebted for the gracious welcome given to it by the University. The last three days were devoted to the proceedings of the nineteen scientific Sections in one of the most instructive programmes yet drawn up for an annual meeting. The papers read will be published in a special volume of Proceedings, and it is hoped as well to print a few of them in the much restricted pages of this *Journal*. Many of the discussions are reported in this week's issue. This is not the place to enumerate the many interesting themes presented by men speaking with authority, but it will not be thought invidious if we refer in particular to the generosity of that doyen of medical science, Sir Henry Dale, O.M., who not only opened the discussions at two Section meetings but also on Friday night gave the popular lecture, which entranced his listeners.

Our hosts at Cambridge have set a standard for Annual Meetings which we hope will serve as a model for future years. Few places, indeed, can offer to medical men the rich and varied attractions of an ancient university town. But Cambridge has shown that dignity and learning are not incompatible with enjoyment and grace of living, as exemplified in such delightful fashion throughout the meeting by Sir Lionel and Lady Whitby. In Cambridge tradition is a living force which is an inspiration to those working in advanced fields of science. Very many of its students are supported out of public funds, as in part is the University itself. Yet both preserve that intellectual freedom so essential to the advancement of knowledge. Here is a pattern which the world of Medicine may try to follow in the coming years.

SOME POINTS OF DEBATE

The report of the Annual Representative Meeting was published in last week's *Supplement* and is concluded this week. Once more 372 Representatives were provided with an annual occasion to be "outspoken in criticism and debate." At the start there was a motion from the Metropolitan Counties Branch condemning the method of block voting for elections of the Council and Standing Committees. This brought into the open a grouse that has for some years been voiced in those informal conversations that are such an attractive part of a large conference. The motion was carried by 124 votes to 90, and it may be presumed that block voting will disappear at next year's A.R.M. There was a further move to criticize the Council for the conduct of the profession's case during the past twelve months. It could not, of course, be expected that

such a vast change in the life of the profession as is inevitable under the National Health Service Act should be introduced without feelings of anxiety and discontent among medical men. To set up a committee of inquiry, as was moved, would at the best have been a waste of time, but it is nevertheless better that such criticism should come into the open rather than be left to rankle unheard. Indeed, the fact that there was so little support for the motion moved by Dr. Breach showed that the Representative Body, reflecting opinion in the profession generally, has sustained its desire for a comprehensive medical service for the whole community in a scheme which we believe gives doctors "elbow room for a man to work out his own ideas."

The two matters which stood out in the A.R.M. debates were the Association's plans for the organization of consultants and specialists and the question of trade union status. The discussion on these two important matters was fully reported in the *Supplement* of last week. The plan for the first of these was most ably presented by Mr. A. M. A. Moore, Chairman of the Consultants and Specialists Committee, and appointed at the Meeting as the Treasurer for 1948–51. The Representatives agreed to the important proposal that in the B.M.A.'s scheme consultants and specialists should have complete autonomy, and when Mr. Ross Smith brought forward a motion to this effect Dr. H. Guy Dain, the Chairman of Council, said that this was acceptable to the Council of the B.M.A. The second point stressed by Mr. Moore was on the proportions of teachers and non-teachers on the Central Committee. In the discussions that had taken place the provincial teaching hospital staffs had felt that they would be out-voted on the new Central Committee. In view of this the Non-undergraduate Teaching Association and the Provincial Teachers Association had agreed to equal representation —a most satisfactory outcome.

Under the heading of "Future Organization of the Association" on the agenda paper were a number of motions on the theme of the first—"that the British Medical Association explore the possibility of setting up a body equivalent to a trade union." After some discussion on this it was agreed to refer the matter to Council. The merits of the case will have to be gone into with great care before the matter is once more presented to the Representative Body, but it is as well to reflect that the strength and influence of the B.M.A. reside largely in the fact that it is a voluntary organization, and that in the future the appeal to its members of a voluntary body will in a planned society be even stronger than it has been in the past.

RETIREMENT FROM OFFICE

Last week two of the principal officers of the British Medical Association relinquished the responsible posts which they have for many years held with much distinction and ability, years of testing and trial that have greatly added to the burden of responsibility which those in high office must always carry. Dr. J. B. Miller, who is succeeded by Dr. E. A. Gregg, has been Chairman of the Representative Body for three strenuous years, during which no fewer than seven Representative Meetings have been held. During the forty years of its history the Representative Body has had no more exacting time than the past three. In an atmosphere often tense with political uncertainties it has had to make momentous decisions affecting the future of the medical profession. That it has acquitted itself of its hard task with decorum and wisdom has been in large measure due to the firm but tolerant conduct of its debates by Dr. Miller, who has known when to use his gift of humorous interjection as a solvent of tension. It is safe to say that during his stormy years of office he has made many friends and no enemies, no mean tribute to his sterling character. Dr. John W. Bone had made known his wish to retire from the office of Treasurer, and is succeeded by Mr. A. M. A. Moore. Recognition of his long years of devoted service to the B.M.A., and especially of his nine years' treasurership, was made at the Meeting last week by the award to him of the Gold Medal of the Association, the highest honour it can bestow. Dr. Bone's remarkable grasp of the business of any meeting, whether of committee or of Council, admirably fitted him for the control of the complex finances of a large organization. And he has had to exercise this control during the difficult war years. Under his pertinacious and skilful guidance the financial position of the Association has been greatly strengthened, and he hands on to his successor a clean balance-sheet.

It is well to record that the two distinguished officers of the Association who now retire have given it without stint long years of hard work without monetary reward. Their service has been voluntary, and their reward, we may be sure, the satisfaction of work well done and the high esteem in which they are held by their professional colleagues.

HEALTH OF ARC WELDERS

Since Doig and McLaughlin[1] drew attention in 1936 to siderosis in arc welders much has been written on the subject. First Enzer and Sander[2] reported the histological findings in the lungs of an arc welder exhumed eighteen months after death; they showed that the radiological shadows were caused by deposits of iron in the peribronchial and periarterial lymph spaces and that there was no fibrosis in the lung. Enzer, Simonsen, and Evans[3] then showed that the deposits caused no demonstrable disability or reduction in vital capacity. This year the original authors[4] have followed up their cases and found that the iron has been got rid of and that the radiological shadows have become less evident. Our knowledge of arc welders' siderosis, apart from its morbid anatomy, now seems to be fairly complete, but it is remarkable that in these twelve years no pathologist has been able to describe the findings at a recent necropsy on an arc welder.

Arc welding became very important during the war, and the United States Public Health Service[5] has recently issued a report on the health of arc welders in steel-ship construction. This is based on a survey carried out in 1944 on 4,650 men and women working in seven shipyards on the Atlantic, the Mexican Gulf, and the Pacific coasts. The fume to which the workers were exposed was analysed. As might be expected, it was highest in the most confined welding spaces, but it contained more than 30 mg. of ferric oxide per cubic metre of air for all welding locations and more than 15 mg. of zinc oxide per cubic metre in several. The fume consists mostly of ferric oxide 50%, titanium dioxide 15%, silica 8%, and a mixture of acid-soluble metals such as magnesium, calcium, aluminium, manganese, chromium, copper, and sodium. More than half the samples of gas were found to contain fewer than 5 parts per million of nitrogen oxides.

[1] *Lancet*, 1936, **1**, 771.
[2] *J. Industr. Hyg.*, 1938, **20**, 333.
[3] Ibid., 1945, **27**, 147.
[4] *Lancet*, 1948, **1**, 789.
[5] *Public Health Bulletin*, No. 298, U.S. Public Health Service.

Diseases other than welders' siderosis found in the group included metal-fume fever—chiefly among men working on galvanized metal and piping. Conjunctival irritation was prevalent, and though actinic conjunctivitis ("flashed eyes") was found infrequently many workers reported having been affected at some time in the past. Nasal congestion, pharyngitis, and upper respiratory symptoms were more prevalent among welders who used tobacco than among those in a control group. There were 371 (8.1%) shipyard workers who showed evidence of calcified primary tuberculosis, while the incidence of reinfectious tuberculosis was 1.3%. Possibly a selective influence kept people with tuberculosis away from welding. Rheumatic heart disease was found in 1.6% of the male shipyard workers, and the incidence of arteriosclerotic hypertensive heart disease was 5.4% in white male welders, compared with 17.9% in a similar group of non-welders. As welding fumes may potentially produce anaemia, full blood examinations were carried out, but the results showed no difference between welders and non-welders. However, there was some evidence to suggest that men welding galvanized metal and exposed to zinc fumes are more likely to have abnormal sedimentation rates than those not so exposed. This sign may be a prodrome of zinc chill.

Slag burns or scars were characteristic occupational stigmata. They were most commonly observed on the antero-lateral aspect of the elbow just lateral to the cubital fossa. Right-handed welders showed the lesion on the left arm and left-handed welders on the right arm. They were also found around the ankles, along the belt line of the abdomen, and in the episternal region. The burns were often in a stage of indolent ulceration showing a dirty granulating base. A recent small burn often looked rather like a doughnut, for the lesion was a ring of vesiculation enclosing a tiny area of seared skin. Dressings were not often applied, and severe secondary infection was rare. These burns were commonest in the most experienced welders doing overhead work.

FOOD PRESERVATION

With the growth of cities more and more people are depending on food that has been kept, and because of the scarcity of food throughout the world and of the special nutritive value of perishable food it has become essential to preserve the surpluses produced in glut periods for use later. Methods of preservation must be based on a knowledge of the composition of foodstuffs and of the changes that take place when they are kept or processed. Research on these problems is undertaken by the Food Investigation Board, and a report on the Board's work during the years 1940–1946 has been published by the Department of Scientific and Industrial Research.[1]

The preservation of food in good condition does not depend only on killing off micro-organisms or on preventing their growth and activity, since fresh foods are not wholly dead. Meat and vegetables contain enzymes, while complicated metabolic changes occur in fruit. In preservation either of two lines may be followed: the foodstuff may be completely killed by heat and its condition fixed, as is done when fruit is canned, or the metabolic processes may be controlled in order that the food may remain palatable. In dehydration, which was the chief study of the Food Board during the war, the first line must be taken; without the preliminary scalding dehydrated vegetables are tough and of poor quality, and their ascorbic acid is destroyed by oxidase. Dried milk keeps much better if the milk is pasteurized at a higher temperature than normal before drying.

[1] *Food Investigation 1940 to 1946*. London, 1948. H.M.S.O. Price 9d. net.

Killing micro-organisms and enzymes is not enough to prevent deterioration. Unless the water content is reduced to below 5% vegetables lose their colour and ascorbic acid. For prolonged storage oxygen must be removed, otherwise the carotene of vegetables and the fats of dried milk are oxidized. Each foodstuff presents its special problems. The biological value of the proteins of dried milk falls on keeping. This is due to the combination of free amino groups, mainly lysine, with reducing sugars. The production of "off colour" in dried carrots is due to the presence of heavy metal salts. The deterioration of spray-dried egg is mainly due to the presence of glucose; the glucose can be removed by fermentation with yeast.

Cold instead of heat can be used to stop metabolism and the growth of micro-organisms in fish. The use of quick freezing at all the main ports should give a constant flow of supplies to consumers. One firm is planning to freeze fish at sea, so that the whole catch will be landed fresh however long the voyage.

To preserve fruit the control of metabolic processes may be necessary. The functional disease of apples known as "scald" is related to the concentration of volatile compounds produced; at present the practical method of controlling this disease is to wrap the fruit in paper impregnated with mineral oil. Temperature influences the metabolism of stored fruit. Cox's Orange Pippins, after the skin has been coated with oil, keep best at 40° F. (4.4° C.). Low temperatures upset the metabolism of plums, peaches, bananas, and tomatoes. Storage at 31° F. (−0.6° C.) for longer than 3 weeks causes "internal browning" of Victoria plums. But if the cold storage is broken by a period of 2 or 3 days at 65° F. (18.4° C.) the plums can be kept for 35 to 40 days. The ripening mechanism of immature tomatoes is damaged by exposure to temperatures below 50–55° F. (10–13° C.).

New methods of conservation will cut down waste and give us wholesome foodstuffs of good quality, but those who remember food as it was in small market towns 50 years ago will view the changes with mixed feelings. The standardized butter of to-day is better than the average butter made under insanitary conditions by farmers' wives of varying skill, but it will not compare with the best butter of those days, with its slight flavour of wood smoke. Shop eggs are much worse than they were then; for with two markets a week no egg was over a week old. Now the majority are unable to buy new-laid eggs by honest means, and egg powder, however skilfully preserved, is no substitute for fresh eggs. There is a danger that the new methods may lead to loss of variety and to acceptance of a standardized second best.

ROSS JUBILEE

In the *British Medical Journal* of Dec. 18, 1897, Surgeon-Major Ronald Ross, I.M.S., contributed an article entitled "On Some Peculiar Pigmented Cells found in Two Mosquitos fed on Malarial Blood," in which he described how he found "certain remarkable and suspicious cells containing pigment identical in appearance to that of the parasite of malaria." Ross forwarded his preparations to the Editor of the *Journal*, who submitted them for examination to Dr. Thin, Mr. Bland Sutton, and Dr. Patrick Manson. Manson, in a note to Ross's article, wrote, "There can be no question that these cells contain a pigment optically indistinguishable from the pigment which is so characteristic a feature in the malaria parasite. . . . I am inclined to think that Ross may have found the extracorporeal phase of malaria. If this be the case, then he has made a discovery of the first importance." In the *Journal* of June 18, 1898, Dr. Patrick Manson contributed an article on Ross's

investigations, in order, as he put it, "First, again to call the attention of workers in malaria to this promising field for investigation; secondly, to place on record Ross's claims to priority in discovery; and lastly, to vindicate myself from the charge of unscientific and unwarrantable speculation." Manson had recorded his "speculation" in the Goulstonian lectures printed in this *Journal* in 1896. This week the London School of Hygiene and Tropical Medicine, and the Ross Institute of Tropical Hygiene, celebrated the Jubilee of Ross's discovery.

CANCER CELLS IN SPUTUM AND URINE

The increasing use of the biopsy has proved to pathologists how valuable their contribution can be to the problem of the early diagnosis of malignancy, in spite of the fact that the material submitted for examination is of necessity often very poor in quality and very small in quantity. Yet even the smallest specimens, including those taken by the needle and syringe, may yield surprisingly good results. Is it sound pathology to take a further step and consider the possibility of diagnosing malignant disease by discovering a few isolated clusters, each perhaps composed of 20 to 30 cells, in films of the sputum or urinary deposit?

The first serious attempt to answer this question was made at St. Thomas's Hospital in 1935 by Dudgeon and Wrigley,[1] who were able to demonstrate malignant cells in the sputum in 68% of patients with proved bronchogenic carcinoma (in a series of 58 cases). Barrett[2] and Gowar[3] reported positive results in 68% and 64% respectively. A very complete study was published by Wandall,[4] of Copenhagen, in 1944; out of 100 proved cases positive results were obtained in 84. In this series 82 of the patients were examined by bronchoscopy; it is significant that a positive diagnosis as a result of examination of biopsy specimens could be made in only 55%. By combining both methods Wandall was able to make a correct diagnosis of malignancy in 94% of proved cases. The percentage of false positives in a series of 193 sputum examinations was 3.1. Herbut and Clerf[5] examined the bronchial secretion removed by bronchoscope in 57 proved cases of bronchogenic cancer, and found cancer cells in 82.4%; examination of biopsy specimens gave positive results in only 42%, but a combination of both methods provided a positive diagnosis in 92.5%. It seems probable that bronchial secretion may prove to be more suitable material than sputum; it has the added advantage that if the biopsy material is a poor sample, or if for various reasons material is not removed, the growth can often be accurately localized.

The work has been carried a stage further by Woolner and McDonald[6] at the Mayo Clinic. They point out that negative results are to be expected in the small group of patients in whom the growth is peripheral, especially if it has not opened into the airways, and also in the very large majority of cases of bronchial adenoma and cylindroma. Diagnosis from sputum examination is rather more difficult in the mucus-secreting adenocarcinomata, but is of great value in tumours arising in a large, upper-lobe bronchus out of reach of the bronchoscope.

"False positives" are recorded in from 1 to 3% of sputum examinations. A few of these were obtained in cases of chronic pulmonary infection with incomplete resolution and squamous metaplasia of the bronchial epithelium, but the majority are most probably due to lack of experience with the method. The investigation must be conducted by a morbid histologist. It demands not only an intimate knowledge of the cytology of malignant growths in general and of the perplexing variations in structure which are encountered in bronchial cancer, but also a period of apprenticeship in the study of the finer cytology of the sputum in non-malignant pulmonary disease and the appearances of malignant cells in film preparations made from the surface of all varieties of primary bronchial neoplasms. The specimen must be examined without delay; if this is unavoidable it should be collected in 10 ml. of absolute alcohol. A minimum of five films from one specimen must be made. If clinical evidence is sufficiently in favour of neoplasm several specimens of sputum should be examined. All those who have had experience in the method agree that a positive diagnosis must rest on finding several clusters of malignant cells in the specimen. The clusters must be composed of cells which are fresh enough to show nuclear detail, so that the chromatin network and nucleoli are clearly displayed. The clusters must also be large enough for variations in nuclear shape, size, and depth of staining to be visible.

Accompanying Woolner and McDonald's paper are two others on the identification of malignant cells in urinary sediment. The first, by Daut and McDonald,[7] records an investigation of forty consecutive cases of genito-urinary disease. In nineteen of these, subsequently proved to be suffering from malignant disease, carcinoma cells were found in the urinary deposit. In the second paper Ludden and McDonald[8] describe the appearance of malignant cells in smears of sediment from the urine of patients with malignant disease of the kidney. Neither of these papers is convincing enough to justify the routine use of the method, but both are sufficiently encouraging to stimulate further investigation.

1 *J. Laryng.*, 1935, **50**, 752.
2 *J. thorac. Surg.*, 1938, **8**, 169.
3 *Brit. J. Surg.*, 1943, **30**, 193.
4 *Acta chir. scand.* (Suppl. 93), 1944, **19**, 1.
5 *Med. Clin. N. Amer.*, 1946, **30**, 1384.
6 *Proc. Mayo Clin.*, 1947, **22**, 369.
7 Ibid., 1947, **22**, 382.
8 Ibid., 1947, **22**, 386.

THE EXCRETION OF ANTIMONY

There has hitherto been little precise information about the excretion of antimony compounds, which are widely used in the treatment of schistosomiasis. In this disease tartar emetic or an organic antimonial compound is injected intravenously. To be effective a course of injections, commonly on alternate days, must be given. Antimony compounds differ in this respect from an arsenic compound such as neoarsphenamine, which is given once a week, but resemble mapharside, which is often given daily. It is known that mapharside is much more rapidly excreted than neoarsphenamine, as is to be expected from the smaller size of its molecule. It might be assumed, therefore, that antimony compounds are rapidly excreted.

Recently Bartter and his colleagues[1] have investigated the excretion of tartar emetic in which radioactive antimony was incorporated. Antimony metal was bombarded with deuterons to produce radioactive isotopes. In this process the naturally occurring isotopes Sb^{123} and Sb^{121} are transformed into Sb^{124} and Sb^{122} respectively. The radioactive antimony was then synthesized into tartar emetic. Early work was carried out on dogs, and the authors had no reason to expect untoward results from the administration of the radioactive material to human beings. The quantity of antimony administered to one patient during 24 days was a total of 640 mg., but they do not record what proportion of this was radioactive. Sb^{124} has a half-life of 60 days, so that presumably ill effects would have shown soon. None were observed.

After a single intravenous injection the amount of antimony in the blood fell rapidly—from 0.15 mg. per 100 ml. immediately after injection to one-third of that amount in one hour, and to 0.01 mg. per 100 ml. in twelve hours.

1 *Amer. J. trop. Med.* 1947, **27**, 403.
2 *Ind. J. med. Res.*, 1929, **17**, 94.
3 *Biochem. J.*, 1943, **37**, 198.
4 *Lancet*, 1946, **1**, 9.

Some antimony was found in the urine after 30 minutes. The drug was excreted in both the urine and faeces; in 7 days about 30% of the dose given had been excreted, and in 27 days about 70%. Four times as much was excreted in the urine as in the faeces. In the case of one patient who vomited 30 minutes after receiving the tartar emetic intravenously as much as 1.2% of the dose injected was recovered from the vomit. Presumably the tartar emetic was excreted into the stomach and produced emesis just as if it had been given by mouth. These results may be compared with those of Boyd and Roy,[2] who found that the total urinary excretion of sodium antimonyl tartrate during three days after intravenous injection was 4%; in the experiments of Bartter *et al.* the corresponding figure was around 16%. On the other hand, after giving a single dose of "fouadin" Goodwin and Page[3] found that 18–35% of the drug was excreted in 24 hours.

The results are surprising because they show that the rate of excretion of antimony, when given as tartar emetic, is less than would be expected. It cannot be said that a substance of which only 30% is excreted in seven days is rapidly excreted, and it is therefore puzzling that it is necessary to give injections at comparatively short intervals. Yet frequent injections are necessary, for the most successful clinical results are those of Alves and Blair,[4] who treated patients by giving three injections of sodium antimonyl tartrate on each of two successive days. One hundred patients were treated, and no viable eggs were discovered in the excreta of any of them immediately after treatment was completed, or in fifty-three patients examined three months later. Alves and Blair attempted to give antimony as an intravenous drip in the same way as mapharside, but found that it caused intense pain in the veins. In observations on the rate of excretion they also found it to be relatively slow, for at the end of three days 70–80% remained in the body.

STRUCTURE OF VACCINIA VIRUS

A number of plant viruses have been prepared in crystalline form and the shape and size of their particles examined by electron micrography, but considerably less has been discovered about animal viruses. The first electron micrographs to provide satisfactory evidence of structure in the vaccinia virus have now been obtained by Drs. I. M. Dawson and A. S. McFarlane[1] at the National Institute for Medical Research, using a sufficient variety of techniques to place their main conclusions beyond reasonable doubt. Omitting details of purification, which included the confirmation of biological activity, the virus particles were in all cases "fixed" with osmic acid before examination. This is equivalent in electron microscopy to visual staining. The difference is that with the electron microscope differential scattering power depends on variations in density. The usefulness of osmic acid in particular is due primarily to the fact that osmium is one of the heaviest of the chemical elements.

For the investigation of surface structure the further method of gold-shadowing was employed. This consists in the deposition of a fine layer of gold, a few atoms thick, projected at a small angle to the surface so that a shadowing effect is produced. Particles thus prepared give an appearance which, apart from the difference in scale, is not unlike that of a lump of sugar. The surface granules are believed to represent individual macromolecules. In some cases chains of these smaller particles can be seen in the neighbourhood of the main virus particles, as if accidentally detached from them, but there is no evidence of corresponding surface scars on the main virus particles. Micrographs obtained with similar osmic acid fixation or staining, but without gold-shadowing, confirm the existence of a central body, first seen in outline by Green, Anderson, and Smadel in 1942.[2]

A further series of micrographs were obtained after treatment with minute quantities of crystalline pepsin. This is known to be a useful agent for the removal of nucleic acid from vaccinia. Its effect, as now seen in the micrographs, is to leave the central body apparently untouched while removing most or all of the material from the remainder of the virus particles, except for a presumed outer layer which resembles a membrane. The latter appears to collapse, being in general longer, narrower, and less regular in shape than in the intact particles. Further—and this is particularly well seen in micrographs of the pepsin-treated virus prepared by the gold-shadowing method—there are clear indications of folding such as would naturally be expected in a collapsed membrane. It is believed that the chains of detached macromolecules already mentioned come from this perinuclear material. On the other hand the bulk of the phosphorus and desoxyribo-nucleic acid is retained in the residue, thus appearing to be connected with the central body. To that extent, therefore, there is an indication of chemical similarity between the central body of these virus particles and a normal cell nucleus. It should be noted, however, that the virus particles are of an altogether lower order of size, and, while the term nucleus can be legitimately used in its simple physical sense to describe the observed central bodies, the cytological connotation could be misleading.

Finally, there is a suggestion based on the manner of contraction of the virus particles under different conditions of drying that there may be a supporting internal network which would permit of a concertina-like movement. What has in any case been established is that the structure of even a comparatively small animal virus is definitely more complex than that of the fully crystalline plant viruses. It also appears likely that the animal viruses can be regarded as providing a link between the bacteria, looked upon as organisms in the accepted sense, and the plant viruses, to which the term organism can scarcely be applied.

[1] Dawson, I. M., and McFarlane, A. S., *Nature, Lond.*, 1948, **161**, 464.
[2] Green, R. H., Anderson, T. F., and Smadel, J. E., 1942, **75**, 651.

At its first meeting on June 30 the new Council unanimously elected Dr. H. Guy Dain as its Chairman for the coming year. Dr. Dain has been Chairman of Council since September, 1943.

At the last meeting of the "old" Council on June 28 it was decided to award to Dr. John W. Bone, the retiring Treasurer, the Gold Medal of the Association. In announcing this to the Representative Body, which greeted the award with applause, the Chairman of Council said that the Association's Gold Medal was awarded to anyone "who shall have conspicuously raised the character of the profession by scientific work, by extraordinary special service, or by services rendered to the British Medical Association."

One of the first actions of the Representative Body last week was to elect as Vice-Presidents of the B.M.A. Dr. Peter Macdonald, of York, and Prof. R. M. F. Picken, of Cardiff. Dr. Peter Macdonald has given long years of service to the Association and was from 1942 to 1945 Chairman of the Representative Body. Prof. Picken, who is Provost of the Welsh School of Medicine, was outstanding as the Chairman of the Public Health Committee, and for fifteen years exerted his thoughtful influence on the Council of the Association, acting temporarily as its Chairman during the absence in India of Mr. H. S. Souttar, who was Chairman at that time.

UROLOGICAL SURGEONS IN CONFERENCE

The British Association of Urological Surgeons held a meeting in London, under the presidency of Mr. Clifford Morson, from June 24 to 26. The principal subjects of discussion were the surgery of urethral stricture and the aetiology and treatment of renal and ureteral calculi; but many miscellaneous papers were read and films shown, and operating sessions and demonstrations were arranged at ten London hospitals.

Surgery of Urethral Stricture

The visitors were the guests of the Section of Urology of the Royal Society of Medicine for a discussion on the surgery of urethral stricture. It was opened by Mr. H. L. Attwater, who referred to the slow onset of such strictures. The initial causes might be forgotten long before the stricture made itself manifest. It had been calculated that only 5% of cases appeared for treatment within five years of the initial lesion. From time immemorial man had dealt with strictures by dilatation. Attempts had been made to shorten the tedium of the process, but even to-day the melancholy conclusion must be reached that no form of treatment had yet produced a certain cure. All operations on the urethra were themselves traumatic procedures, and might be precursors of stricture, and "once a stricture always a stricture."

The first indication for surgical intervention was failure to achieve reasonable results by dilatation. The surgical measures to be employed depended largely on the particular case. The onset of urgent symptoms might call for immediate intervention, and special care was necessary if the renal function was poor. Patients with chronically distended bladders due to stricture were in much the same position as men with enlarged prostates. When surgical intervention had to be undertaken some form of deliberate approach must be adopted according to the requirements of the particular case. Operation should cause the least possible trauma to the urethra. For a long time external urethrotomy was the only approach to this problem. Internal urethrotomy had a limited application, and unfortunately far too often failed to produce a lasting result. But there were occasions when it might be useful, including those in which for some reason it was necessary to have a quick restoration of the urethra. Mr. Attwater then described the various surgical procedures, including complete excision of the stricture.

Mr. Terence Millin said that internal urethrotomy performed in the usual manner was a completely blind procedure, and did not fit in with the essential pathology. He described how a complete excision of the stricture was carried out, taking away as much as 6 cm. of the urethra. Radical surgery had a place in treatment, especially in traumatic strictures, but it must be truly radical, and anastomosis must be obtained without tension. The results could be wellnigh permanent. He referred to one such case in which 17 operations had been done, 7 of them external urethrotomies. Then a complete excision was carried out, with an entirely satisfactory result. This result had been maintained now for six months, 11½ years after the start of the trouble. A high incidence of sexual dysfunction followed rupture of the urethra, but several of the cases on which he had operated were normal sexually, despite the loss of 6 cm. of urethra.

Dr. Leander (Stockholm) said that the "pillars of wisdom" in perineal excision were: (1) as complete excision as possible of all cicatricial tissue; (2) mobilization of the urethral stumps so that they could be sutured without tension; and (3) avoidance of cavities between the sutured urethra and the perineal section. He described six cases, two in boys and the others in older persons, in which these principles had been followed and a urinary stream of normal size had resulted, although in some cases more than 5 cm. of urethra was removed. In one of the cases there was slight incontinence for two years, but that was the only unfavourable result.

Mr. W. S. Mack said that he had noticed an increasing incidence of urethral stricture. Unfortunately, in the clinics, while information was available on the incidence of gonorrhoea, none was forthcoming concerning non-specific urethritis, but it was his impression that there were more cases nowadays, following the advent of sulphonamide and penicillin treatment, in which stricture was associated with that condition. He was very much against operation for urethral stricture if it could be avoided, but in many instances operation was necessary. In spite of what Mr. Millin had said, he had found certain advantages in internal urethrotomy. Mr. Stewart mentioned the difficulty of treating the constricted penile urethra, and described a method of dividing the penis along the ventral surface and using the scrotal skin and foreskin in the reconstruction of the urethra.

Renal and Vesical Calculi

Mr. J. M. Ridley Thomas, of Norwich, gave an account of vesical calculus as found in Norfolk. He mentioned that in the first half of the eighteenth century almost every small town in Norfolk appeared to have a man skilled in lithotomy. "Stone in Norfolk" was the subject of the Address in Surgery at the Annual Meeting of the British Medical Association in 1874. But vesical calculus almost entirely disappeared between the years 1910 and 1930, the disappearance coinciding with the rising standard of living. Recognition of the importance of an adequate and balanced diet for children, and the change to mixed farming in a county which for many years was a grain-producing area, had brought about this alteration. He gave certain figures relating to hospital admissions for the years 1929–38 and 1943–7. Cases of stone complicating enlarged prostate numbered 16 in the first period, 13 in the second; cases of stone following prostatectomy numbered respectively 10 and 3; stricture of urethra, diverticuli, etc., 12 and 8; and primary stone, 38 and 3. Thus in the first of these periods about 50% of calculi appeared to have no obvious underlying urinary pathology, whereas in the second period only about 10% could not be accounted for by a pre-existing lesion. Prostatic obstruction was the commonest cause of stone in older patients, due in most cases to the presence of residual urine. In 1929–38, out of 76 patients 14 died, whereas in 1943–7 among 27 patients there were no deaths. Of these 27 patients, 20 were treated by lithotomy, 5 by lithotrity, and 2 by other methods. For many years the lithotrite had been a popular instrument in Norfolk, but recently the number of cases suitable for its use had diminished considerably. Norfolk could no longer be considered an area where vesical calculus was common. In children it had now become very rare.

Mr. L. N. Pyrah, of Leeds, spoke on calcification of the kidney in pyloric stenosis and other conditions. He drew attention to the conditions under which calcification in the tubules of the kidney could occur. It was mainly the result of two causative factors probably operating in different degrees in different cases. The first was a local increase in the concentration of calcium ions within the kidney, brought about either by an elevation of the serum calcium, as in hyperparathyroidism, or by a reduction in the total tissue fluids of the body, as in pyloric stenosis, with vomiting and subsequent dehydration. The second factor was strong alkalinity of the reaction in the kidney tissue fluids or glomerular filtrate, either as a result of generalized alkalosis or of local changes arising from infection, in which case the concentration of calcium salts which would not otherwise be precipitated came down in the renal tubules as calcium phosphate.

In hyperparathyroidism the serum calcium was raised to values varying from 12.5 to 23 mg. per 100 ml. of blood. The percentage incidence of calcification for this disease was unknown, but when it occurred it was seen in the cells of the tubules in the cortical part of the kidney. Not only did calcification of the renal tubules occur in hyperparathyroidism but also calculus formation in the calices and pelves of the kidney, probably brought about by the same mechanism. Of 11 cases of hyperparathyroidism in which he had successfully removed an adenoma, 4 had renal calculi. In three of these the stones disappeared after removal of the adenoma and the administration of large quantities of fluid, together with an acidogenic diet. In hypervitaminosis D a high blood calcium was the chief operative cause in the production of renal calcification. A few cases had been reported in children of calcification in the tubules of the kidney following an overdose of cod-liver oil. It was possible to study the calcification in hypervitaminosis D very readily, using the rat as an experimental animal. A moderate degree of calcification was sometimes found after only two days of an overdose of vitamin D, and usually in three days. It occurred first in the tubules of the cells near

the cortex. In rats killed after four or five days of overdose a much heavier degree of calcification was found, and the calcification was less marked in the cortex and more marked in the boundary zone between the medulla and the renal cortex. Rats fed on excessive vitamin D for two or three days only and killed ten or twelve days later were usually free from calcification. It was concluded that the calcareous debris had gone into solution or had been extruded down the collecting tubules. The calcification was therefore a reversible process in its early stages. In such cases there was no evidence of any destruction of the kidney tubules or of deviation from the normal.

After illustrating the second group of conditions, in which alkalosis was the predominant factor, Mr. Pyrah concluded that calcification of the tubules of the kidney occurred most commonly where there was a high serum calcium or where there was a profound alkalosis. In some cases, but not in all, it was associated with cell damage. In the early stages the calcification was a reversible process.

An Uncommon Bladder Condition

Mr. T. J. D. Lane, of Dublin, described an uncommon bladder condition simulating carcinoma. His interest in this subject arose out of a case which he saw in 1943, and which remained a mystery until he came across a paper by Emmett and McDonald on "Proliferation of Glands of the Urinary Bladder simulating Malignant Neoplasm." His case fitted in with the "intestinal gland" variety of cystitis glandularis there described. Mr. Lane went on to discuss the several possible origins of primary vesical tumours composed of glands with columnar epithelium and also of cystitis glandularis. According to the authors just mentioned there were two types of cystitis glandularis, the intestinal gland type and the subtrigonal gland type. In the former the acini were lined by a simple layer of columnar epithelium which had basically placed nuclei. These cells were filled with mucus and were indistinguishable from goblet cells of the intestinal tract. In the subtrigonal lesion the glands were lined peripherally by multiple layers of cells suggestive of stratified squamous epithelium with a single layer of columnar cells adjacent to the lumen. The mucus produced by this type was thinner, and, unlike the intestinal type, there was a tendency to cyst formation. There were no special symptoms. Painless haematuria might be present alone, or with frequency or dysuria. The whole clinical picture was confused. Biopsy was essential for proof of the presence of cystitis cystica and to differentiate it from cystitis granulosa and follicularis on the one hand and from malignant disease on the other. The resemblance to cancer in some cases had to be seen to be believed. As a rule these glandular lesions yielded to diathermy.

Although in his title Mr. Lane had used the word "uncommon," he said in conclusion that the condition was probably not very uncommon. There was little doubt that, if biopsy were resorted to oftener, glandular and other forms of metaplasia would be found much more frequently.

The concluding paper at the conference was by Mr. Hamilton Bailey (London) on some urological clinical entities frequently missed. Numbers of patients, he said, with stone in the right ureter bore the scar of a recent appendicectomy. But woe betide the patient with gangrenous appendicitis who passed blood in the urine. Until it was better known that an inflamed appendix lying in juxtaposition to the ureter could give rise to ureteritis causing haematuria lives would be lost. When blood was found in the urine the practitioner invariably ruled out appendicitis, and not infrequently the consultant aided and abetted him by treating the patient for pyelitis. When a differential diagnosis between early acute appendicitis and renal colic was at stake, urgent excretory pyelography should be undertaken. If the pyelogram showed a normal outline of the right renal calices and there was no evidence of a ureteric calculus, appendicectomy must be performed at once. Another observation by Mr. Hamilton Bailey was that the reno-renal reflex, where a healthy kidney went "on strike" in sympathy with its fellow that had been subjected to operative trauma, was not a rare phenomenon. He concluded by saying that attention to the precept that a complete urinary investigation should be undertaken for every case of haematuria would result in immediate and dramatic improvement in the prognosis of tumours of the bladder.

THE GENETICS OF CANCER

SYMPOSIUM ON MUTATIONS AND INHERITANCE

A two-day symposium on the genetics of cancer opened in London on June 24 under the sponsorship of the Genetical Society of Great Britain and the British Empire Cancer Campaign. Some twenty papers were read, and the contributors included American, Dutch, Danish, French, and Belgian workers. The general themes were the inheritance of cancer in animals and in man and virus- and carcinogen-induced mutations. The chairmen of the various sessions were Dr. E. B. Ford, Dr. A. W. Greenwood, Prof. A. Haddow, and Dr. Cuthbert Dukes.

The opening paper in the discussion on inheritance in animals was given by Dr. W. E. Heston, of the National Cancer Institute, Maryland, who discussed the role of genes and their relationship to extra-chromosomal factors in the development of mammary gland tumours in mice. He described the part played by the milk agent in transforming the normal mammary tissue cell into a malignant cell. What happened in such a transformation was still uncertain; but as the alteration was irreversible it must be a change in fundamental cell physiology. Dr. Kortweg, of Amsterdam, said that the production of oestrone in female mice enhanced their susceptibility to cancer, though it could not yet be said that the production of oestrone was characteristic of high cancer strains. Susceptibility to oestrone influence was just as marked in the mammary glands of high cancer strain female mice as in those of low cancer strain.

Dr. L. Dmochowski, of the Department of Experimental Medicine and Cancer Research, Leeds University, spoke of three factors—the milk agent, the genetic factor, and the hormonal factor—in the origin of breast cancer in mice, and in addition other factors, such as metabolic conditions, might be concerned. The ability to transmit the milk factor to low cancer strain mice varied within very wide limits. There were really two sets of genetic factors, one controlling the susceptibility of breast tissue and the other the milk factor, which might have to be considered particularly in low cancer strain mice. In his view an increase in the hormonal factor rather than an increase in the milk factor was responsible for the development of tumours. All three factors played a part in the origin of breast cancer, and it would be imprudent, to say the least, to state which was the most important.

Prof. J. B. S. Haldane intervened, protesting that it was logically dubious to separate hormonal factors from genetic ones. It seemed to him that some genes would alter the production of hormones. If that sort of distinction were to be made the correct thing would be to distinguish between hormonal factors due to genetic agencies and, on the other hand, hormonal factors due to environment, which would include forcible breeding, castration, injection of hormones, and so on.

Dr. P. A. Gorer, of Guy's Hospital, spoke of the significance of some studies of transplanted tumours. He said that at one time the question of transplanted tumours dominated the whole field of cancer research. To-day the pendulum had swung in the other direction, and transplants were regarded as not of much use. As a matter of fact, the studies of transplanted tumours had placed genetics "on the map" of experimental medicine. Questions of transplant compatibility were much better tackled with tumours than with normal tissues, if only for technical reasons—namely, that it was often by no means easy to see what happened to a graft of normal tissue, whereas no one could mistake a tumour. The influence of antigen II on tumour inoculation was shown in an experiment with mice. In the presence of antigen II, 28 out of 29 specimens showed a response to tumour, and with antigen II absent, out of 40 specimens 37 showed no response.

The question of virus and carcinogen mutations was presented by Dr. L. C. Strong, of the Department of Anatomy at Yale, who gave a critical evaluation of the present status of the problem. Among other contributions to the subject Prof. R. D. Passey, of Leeds, showed some electron microscope studies of normal and malignant tissues of high and low breast-cancer strains of mice, and Dr. A. W. Greenwood, of the Agricultural Research Council, discussed indications of the heritable nature of non-susceptibility to Rous sarcoma in fowls.

Heredity in Human Cancer

At a later session the subject of heredity in human cancer was introduced by Prof. Tage Kemp, of the Human Genetics Institute, Copenhagen. From ancient times, he said, it had been observed that cancer often occurred familially. The genetical aspects of the cancer problem had been the subject of extensive systematic studies in human beings during recent decades. In Copenhagen an investigation had been carried out at the Human Genetics Institute in co-operation with the Danish Cancer Registry, the Radium Centre, and numerous hospitals and clinics. Surveys of several hundreds of families picked out at random from the population had been made. So far as investigations on heredity in breast cancer and in leukaemia were concerned, these had already been published, and an investigation on cancer of the oesophagus was proceeding.

Results obtained up to now showed that tumour-causing factors might be endogenous or environmental. The chief endogenous factor was hereditary predisposition; others were somatic mutation and cytoplasmic inheritance. In the field of breast cancer the families of 197 women and 3 men were studied. According to Oluf Jacobsen, a study of these case histories gave no basis for supposing that exogenous factors played any important part in the development of breast cancer; hereditary predisposition was indicated as the chief factor. The development of the endogenous cancers was probably due to a general hereditary predisposition, and the localization of the tumour was determined by either endogenous or exogenous factors. The general hereditary predisposition was in many pedigrees apparently inherited as a dominant character.

With regard to leukaemia, Videbaek, who had conducted this investigation, was of opinion that leukaemia as such was not inherited; it was a question of inherited predisposition to the disease. The development of leukaemia seemed to depend on various conditions—among others, on a non-specific hereditary predisposition to cancer, which was believed to be present in at least 20% of the population in general. Among the relatives of those with cancer of the body of the uterus the incidence of endogenous cancer was found to be high. In the families of those suffering from cancer of the oesophagus the disease was often found in a close male relative—father or brother. In these families, however, both the patient and the relative were often found to be suffering from chronic alcoholism, and probably it was the tendency to alcoholism and not the tendency to cancer which was inherited, the alcoholism being the cause of the oesophageal cancer.

The experiences of both clinical and experimental investigators confirmed that the probability of mammary cancer and leukaemia developing at an earlier period of life was greater when the genetic conditions were particularly favourable—that is, when there was a demonstrable hereditary taint. On the other hand, the possibility of the occurrence of the disease became greater with advancing age. He concluded by saying that the supposition of somatic mutation or cytoplasmic inheritance as a cause of cancer had not been proved in human beings; the results of cytological investigations of human cancer cells were somewhat obscure.

Family Histories of Breast Cancer Patients

Prof. D. Smithers, of the Royal Cancer Hospital, reported on the family histories of 459 patients suffering from cancer of the breast which had been investigated during the period 1944–7. Some attempt had been made to confirm the causes of death of relatives by letters to hospitals, doctors, and the Registrar-General's department, but such confirmation could be obtained only in a few cases. The figures, therefore, were subject to the errors of inadequate information and faulty recollection, but it was believed that they were an underestimate rather than an overestimate of the incidence of cancer in the families in question. Many people died of cancer without their relations knowing the cause of death, and many patients with cancer of the breast survived for long periods following treatment and ultimately died from some other cause. Comparisons had to be made on the basis of mortality; no adequate morbidity statistics were available, so that it was not possible to include in the figures patients living who had or had had cancer for comparison with the expected incidence in the general population.

Of the 459 families analysed, the patient in 292 of the cases had no knowledge of a family history of cancer. Of the 167 cases in which the patient reported cancer in the family, 76 mentioned cancer of the breast. In 54 of the cases a history of cancer in more than one member of the family was obtained. The 167 patients with a known family history of cancer stated that they knew of this on their mother's side only in 88, on their father's side only in 34, among brothers and sisters in 33, and on both paternal and maternal sides in 12. This gave a maternal side history of 100 cases, compared with a paternal side history in 46. Of the 459 mothers, 30 were known to have died of cancer, but none had had cancer of the breast. The patients had 1,008 sisters, 288 of whom had died, 59 in infancy, and another 200 of causes believed to have been other than cancer. Of the 29 known to have died of cancer, 11 had had cancer of the breast; 11 sisters living had alsq received treatment for breast cancer. Of the 1,059 brothers, 425 had died, 75 in infancy, and another 332 of causes other than cancer. Eighteen had died of cancer, but none of cancer of the breast. One was alive following treatment for cancer.

Analysing these figures, he was unable to confirm the finding of Jacobsen that the age of onset of the disease was lower in those who had a history of cancer in the family; in fact, the age was higher in the cancer family group, though not significantly so. The average age at diagnosis with no history of cancer was 54, and with a cancer history 55.3, though for those with a history of cancer of the breast in the family the figure was 54.1. It was to be expected that patients giving a family history of cancer at the time of diagnosis would tend to have a higher average age than the remainder, because the brothers and sisters of the younger patients were less likely to have reached the cancer age than those of the older subjects. Patients reporting cancer in brothers and sisters were in fact found to be in the older age groups in the series, as compared with those reporting cancer in fathers, mothers, uncles, and aunts. The average age of those reporting cancer in brothers and sisters was 59.7 and of those reporting cancer in mothers and fathers 54.6—a significant difference. Those reporting older generation cancer were of an age close to those reporting no cancer history (54).

This information suggested that there was a significantly high death rate from cancer of the breast in the families of patients with that disease, but no higher death rate from other forms of cancer than would be expected in the general population.

Prof. Smithers concluded by giving the details of three families taken from the group that he had been discussing. In one case the maternal grandmother of the patient died of carcinoma of the breast. She had five sons and three daughters. All three daughters developed cancer of the breast, the age of onset being between 60 and 65. One of the sons died of carcinoma of the rectum. The eldest of the sisters was the patient's mother. The patient herself developed carcinoma of the breast at the age of 42. One of the other sisters had no children; the other had a son and daughter, neither of whom up to date had developed cancer. The brother with cancer of the rectum had three daughters and three sons, and all three daughters had carcinoma of the breast, the age of onset being between 40 and 50.

Genetic Study of Mammary Cancer

The final contribution to the symposium was by Prof. L. S. Penrose, of the Galton Laboratory. The study of mammary cancer, he said, formed a most advantageous starting-point for the investigation of the hereditary factors in cancer, because it was more easily recognized and more accurately diagnosed than malignant growths at most other sites. Moreover, it produced in the great majority of patients a clearly defined range of pathological conditions, which included spheroidal-celled carcinoma, Paget's disease of the nipple, adenocarcinoma, and the typical scirrhous condition in long-standing cases.

It was still doubtful whether heredity played any significant part aetiologically. To try to resolve this uncertainty most investigators in recent years had collected a series of cases, noted the incidence of similar disease among their relatives, and compared it with the corresponding incidence among a control group of cases free from the disease and selected at random. But the difficulties in obtaining a satisfactory control group of family histories had been demonstrated repeatedly. Many

workers still considered that there was not enough evidence to prove the reality of familial transmission of mammary cancer or any type of human malignant disease.

A survey which Prof. Penrose proceeded to describe had been undertaken in an endeavour to remove some of these uncertainties. The material collected began in each instance with a patient attending a clinic after the diagnosis of mammary cancer had been made. The patients were all personally interviewed and hospital records and reports were searched. Altogether 521 histories of cases of mammary cancer were collected. Eleven were set aside as doubtful, and 510 were analysed from different points of view. The mean age at onset was 51.7 years, with a standard deviation of 11.4 years. In 116 pedigrees one or more relatives with mammary cancer were ascertained. The distribution of these 116 familial cases and the mean age of onset (51) were similar to those of the remaining non-familial cases. Of the 510 women 408 were married, and 91 of these had no children; the infertility ratio significantly exceeded the value for married women of the same mean age given by the Registrar-General in 1938, and supported the view that nulliparity was an aetiological factor.

Prof. Penrose discussed various points arising from this investigation and quoted many statistics. Only his conclusions can be given. The evidence from the mothers, sisters, fathers, and brothers strongly suggested that transmission of a specific factor was a major cause of mammary cancer. The hypothesis of inheritance of special organic disposition suggested by Bauer was supported by the homolateral familial findings. The theory, however, implied a significant decrease in the incidence of malignancy of other types in these families, which was not found in Prof. Penrose's survey, nor was there any increase in the incidence of cancer generally which might have suggested a general hereditary predisposition to malignancy of any type. The familial incidence of mammary cancer among siblings was not high enough to suggest any Mendelian explanation of its inheritance. The consanguinity test for rare recessive genes gave negative results.

In view of the work of Bittner on mice, a factor derived from maternal cytoplasm, transmitted by milk, colostrum, or by the cytoplasm of the ovum, might be a specific cause. If that were so, maternal relatives should be more frequently affected with mammary cancer than the corresponding paternal relatives. In his series, among maternal aunts there were 29 mammary against 21 other cases of malignant disease, whereas among paternal aunts there were only 16 mammary cases, against 24 of other types. Those figures were suggestive, but not conclusive, evidence of maternal line inheritance. They derived some slight support from the investigation of maternal and paternal grandparents, where a relative excess of mammary cancer among maternal grandmothers was noted. In both the parental and grandparental generations sisters were more often affected than mothers so far as breast cancer was concerned—a fact of some genetical importance. A search for evidence that mammary cancer could be inherited through maternal milk gave entirely negative results, but a more accurately planned study with that point specially in mind might show a different picture.

In closing the meeting Dr. E. B. Ford from the chair said that the symposium had shown the study of cancer to be very much more an integral part of the study of biology than he had supposed, and this ought to be taken into account in the general work of the biologist. The genetics of cancer must be considered in the whole field of cancer research work at every level. The general practitioner often felt that genetics had very little to offer him as a guide to his own work, but such researches as Prof. Smithers had been carrying out at the Royal Cancer Hospital showed that a family history of cancer might help in diagnosis; it might indicate the possibility of cancer being the source of certain symptoms shown by a patient, and it might in that way lead to an early diagnosis of the disease.

St. Thomas's Hospital has now issued the first post-war edition (1948) of the *Alphabetical and Local List of Old Students*. The names and addresses of old students are listed as well as names of the past and present honorary staff, hospital staff, and winners of scholarships and medals. Owing to the high cost of production, the book can no longer be distributed free, but copies are obtainable at the cost of 2s. 6d. from the School Beadle.

BRITISH HOSPITALS ASSOCIATION

ANNUAL MEETING

The annual meeting of the British Hospitals Association was held in London on June 25, with Sir Bernard Docker presiding. In a telegram expressing regret at his inability to attend, the Duke of Gloucester said that he believed that the voluntary spirit still had a great part to play and that the hospitals would be able to count upon its exercise in the future.

Sir Bernard Docker said that in the development of the voluntary hospitals was enshrined the whole history of the progress of medicine. From two hospitals in the twelfth century their numbers had increased to over 1,100, providing 100,000 beds. Their work had not been limited to caring for the sick: pioneering discoveries in preventive medicine had their origin in the hospitals and their laboratories. The hospitals had been animated by a spirit of service, by independence, and by a continual striving for further improvement. They had set standards which were striven after all over the world. In the last half-century they had treated some 35 million in-patients. The number of out-patient attendances was equal to the population of this country five times over.

Mr. R. L. Newell paid a tribute to the Association for the help it had given to the British Medical Association in the very difficult negotiations of recent times. Up and down the country meetings of hospital boards had in his opinion been needlessly funereal about what they should, on the contrary, regard as the finest hour of voluntary effort. At long last the public had become convinced of their duty to maintain the hospital service, which would no longer be dependent on charitable bequests. He had been gratified to observe in the various regions how many people wished to serve on hospital boards. He was not one of those who thought that hospitals were best run by medical men. The knowledge and understanding of people of all ranks and professions were needed, so that the new hospitals, freed from the menace of insolvency and the stigma of charity, might become the prototype for the world to copy. Some of the British Hospitals Association's activities might become redundant, but it would be a great tragedy were the Association to disappear. It might lead to bureaucratic control of hospitals, which they all feared. Let voluntary effort, as exemplified in the Association, uphold at all costs the spirit of initiative and humanity which had for so long been the mainstay of voluntary hospitals.

Mr. Arnold Walker, chairman of the Central Midwives' Board, hoped that in the new National Health Service the lessons of the past would not be ignored. Dealing with the midwives' position, he remarked on the misfortune that, while 1,000 new midwives were needed every year to make up the establishment, less than half of those who qualified with the Board became practising midwives. This and other problems had recently been investigated by a Working Party whose report would soon appear. In the future just as many midwives would be needed as in the past, and they must be highly qualified. It was therefore essential that the training schools, with their long traditions, should be preserved intact and developed to the greatest possible extent. Mr. Walker gave statistics showing the high proportion of practising midwives trained by voluntary hospitals. The midwife herself was complementary to the doctor so far as normal cases were concerned; her statutory right to take charge of such cases must be preserved if the present standards of the profession were to be maintained. They would disappear entirely were she reduced to the level of a maternity nurse.

Sir George Aylwen, treasurer of St. Bartholomew's, speaking of management and administration, expressed the conviction that the voluntary spirit would be maintained by those who had agreed to serve on hospital management committees, and he stressed the importance of guarding against regimentation in the control and administration of the new hospital service. The meeting was also addressed by Miss M. M. Edwards, secretary of the Nursing Recruitment Centre, and Mr. J. P. Wetenhall, secretary of the Association. Later the business meeting was held, at which the speakers were Sir George Martin and Sir Bertram Ford, president of the Contributory Schemes Association.

ONE HUNDRED AND SIXTEENTH ANNUAL MEETING of the British Medical Association

HELD AT CAMBRIDGE, JUNE, 1948

THE SECTIONS

SUMMARY OF PROCEEDINGS

In subsequent issues there will be printed in the BRITISH MEDICAL JOURNAL *a few of the opening papers read at the Scientific Sections. All the papers will be published in full in a separate volume of Proceedings. The reports of the discussions in this and successive issues are intended to give members who were not present a general idea of the proceedings.*

SECTION OF MEDICINE

Wednesday, June 30

Thiouracil in Thyrotoxicosis

With the president, Dr. Leslie B. Cole (Cambridge), in the chair, Prof. H. P. Himsworth (London) opened a discussion on the use of thiouracil in the treatment of thyrotoxicosis. Prof. Himsworth's paper is printed elsewhere in this issue (p. 61).

Mr. Charles Donald (London) stressed the variability of the disease; functional symptoms difficult to assess were often added. He thought it was impossible to differentiate between diffuse and adenomatous goitres. The drawback to thiouracil was that it produced a damping down rather than a complete cure of the condition; patients often thought they were cured, but after thyroidectomy discovered that this had not been the case. The period of treatment by thiouracil was always being increased; and natural remission was not common in this disease. A complication of treatment with thiouracil which was not often mentioned was thrombosis. The results of surgery were quick, and the mortality in good hands was as low as 1%. The patient was soon able to return to full work and relapse was uncommon.

Dr. D. Verel (Aberdeen) described 61 cases under treatment with thiouracil for six months to three and a half years. Of these cases 9 had had auricular fibrillation, which could be treated first with quinidine and then thiouracil. There had been 8 cases of neutropenia, with no deaths. This should not occur if the dangers were explained to the patient and the drug stopped. There were 3 pregnancies in this series; one infant was born with a goitre, but in the other two cases the drug had been stopped before the thirtieth week, and in one iodine was substituted. Koilonychia occurred in 7 cases, and while the anaemia did not respond to thiouracil the nail changes improved.

Dr. L. W. Hale (Camborne) said that in Cornwall, an endemic goitre area, their experience was preponderantly of secondary thyrotoxicosis. Thiouracil complications had been mild and occasioned minimal interference with medical treatment, but he had yet to be reassured about the prognosis of fully developed agranulocytosis. In his cases tachycardia and fibrillation had been the most difficult features to control. Remission of symptoms following thiouracil was transient, and he felt that the emotional tone of the thiouracil-controlled patient was often not wholly satisfactory. Specialist surgical treatment might give better results than thiouracil, but the latter was preferable to surgery which was in any way short of that standard.

Dr. Russell Fraser (London) thought it important to consider the problems of the technique of thiouracil treatment. The greatest risk was that of goitrogenesis rather than toxicity. He described patients who on large doses had developed a large goitre, eye signs, diplopia, and thiouracil-resistance. He thought, therefore, that it was necessary to get quickly on to the maintenance dose.

Dr. H. Cookson (Bournemouth) described 120 cases, many over the age of 50, treated with methyl thiouracil. He thought the drug was good in young patients with a smooth diffuse goitre and in old patients who were poor risks for surgery. In the large intermediate group surgery was the better treatment after premedication with the drug.

Dr. L. C. Martin (Cambridge) said that thiouracil had two clear advantages. First, in the preparation of patients for operation, particularly those with rheumatic heart disease, it widened the time over which the operation could be safely performed. Secondly, in exophthalmic ophthalmoplegia it happened often that surgery made the patient worse. If thiouracil did this, it was known that surgery was contra-indicated.

Dr. J. N. Milnes (Ipswich) gave an account of 60 cases and thought the drug was good as a pre-operative measure, but dangerous if the patient was not under personal observation.

The president thought the kernel of the problem was how far thiouracil would prevent thyrotoxic heart disease. In this he had come to the conclusion that it was not as good as surgery.

SECTION OF SURGERY

Wednesday, June 30

Tuberculous Adenitis

With the president, Mr. Vernon C. Pennell (Cambridge), in the chair, Mr. Denis Browne (London) opened a discussion on tuberculous adenitis, restricting his remarks to cervical lymph-nodes. Among the portals of entry to the "culture media" at the upper end of the respiratory tract he regarded the adenoids as especially important, and had found tuberculosis present in 3 out of 15 groups of adenoids removed at operation. Differentiation between tuberculous and streptococcal cervical lymphadenitis depended upon observation of the course of the disease. Tuberculous lymph-nodes grew progressively over a period to reach a more or less final size at which necrosis occurred, while in streptococcal adenitis the lymph-nodes waxed and waned in size from time to time, finally recovering without necrosis. In mixed infections the nodes behaved in a rather varied way. Calcification occurred only in tuberculous lymph-nodes.

The treatment of streptococcal lymphadenitis was expectant until suppuration occurred, when pus was expelled by gentle pressure through an incision in a skin fold which was left open but not drained. In the treatment of tuberculous adenitis Mr. Browne had found no advantage in *x* rays, sea air, general measures, ultra-violet light, splinting, and aspiration. Incision and curettage was inaccurate but occasionally effective. Excision and suture was disappointing for several reasons. It was not in fact, as had sometimes been claimed, finally curative: it left a scar; it flattened the neck; it injured important structures, including nerves; it was dangerous; and it could not be combined with tonsillectomy. Incision and forcible digital expression was regarded as the treatment of choice, applicable as soon as pus had formed and when the skin had just become adherent. Digital expression was repeated some twelve or fifteen times until only pure blood was expressed. The resultant wound was fomented and tonsillectomy was performed.

Mr. Hugh Reid (Liverpool) was concerned chiefly with tuberculous adenitis in sites other than the neck. Tuberculous mediastinal lymph-nodes were often responsible for bronchitis, atelectasis, pneumonia, and in childhood even bronchiectasis. He regarded human sputum as the infecting agent in mediastinal as in pulmonary tuberculosis and believed a Ghon focus in the lung to be the portal of entry.

Mr. Ronald Reid (Colchester) reviewed 300 personal cases of tuberculous cervical adenitis treated in an Essex sanatorium and followed for an average period of three years. The upper deep cervical group of glands were affected in 196 of 223 successive cases; the nodes in the posterior triangle in 23; and the supraclavicular nodes in 4. The tonsils, adenoids, and

affected nodes were together believed to constitute a Ghon focus which showed three clinical stages: activity with matting; subsidence with discrete mobility; and resolution with fibrosis and calcification. The patient was treated by sanatorium measures for an average period of sixteen weeks, and the tonsils were then removed and any caseous glands were dissected out; soft and gelatinous lymph-nodes were not interfered with. After this management, and a post-operative convalescence of three weeks on the average, 298 patients remained in good general health for 2 months to 8 years (average 3 years). A recurrence at the old site developed in 11 patients. The cosmetic result was regarded as good in 276, bad in 11, and indifferent in 15. Two patients subsequently suffered from pulmonary and one from meningeal tuberculosis.

Mr. R. R. M. Porter (Southport) agreed with Mr. Browne that the results of gland excision were unsatisfactory. He coaxed the gland out gently with a spoon. Mr. K. Watson (Redhill) questioned whether a lymph-node could be squeezed out completely by digital pressure: he sometimes found a deep gland still present at subsequent dissection. Mr. J. Scholefield (Isleworth) suggested that the popularity of ultra-violet radiation in these cases was due to the difficulty of finding sanatorium accommodation.

Mr. A. S. Till (Oxford) inquired whether Mr. Browne's method gave a more permanent result than excision. Mr. F. E. Stock (Liverpool) expressed satisfaction with the results of radical excision, performed even in the presence of an abscess. Mr. A. Duff (Salisbury) said that a combination of sharp spoon and discretion had all the advantages, and greater certainty, than Mr. Browne's squeezing method. Mr. W. M. Dennison (Glasgow) reported that a method not dissimilar to Mr. Browne's had been used in Glasgow for many years, with the addition of curettage for the extraction of deeply placed lymph-nodes. Excision of skin, glands, and fascia after the method of Mr. Hamilton Bailey had been employed with advantage in the same city for upwards of twenty-five years in late disease with wide skin-involvement.

Mr. Denis Browne replied briefly to the discussion.

SECTION OF OBSTETRICS AND GYNAECOLOGY

Wednesday, June 30

The Problem of Infertility

With the president, Dr. J. R. Campbell Canney (Cambridge), in the chair, Dr. Bethel Solomons (Dublin) opened a discussion on the problem of infertility and its treatment. He said that he regarded sterility and impaired fertility as synonymous terms, and he suggested that fertility tests should be done on prospective mates. Sex education should be given in schools and by parents, and the married couple desirous of having children should obtain advice about sex in general from the gynaecologist. Dr. Solomons considered a marriage as sterile if there was no pregnancy after two years. He thought that male infertility was responsible for this in about 50% of cases. In the woman anatomical abnormalities should be corrected. While the cervical mucus might be an important factor in sterility, various operations on the cervix did not prevent a woman conceiving. A plea was made for the recording of fatalities due to tubal insufflation, and three such cases were described. However, the method was so useful that it should still be carried out; the use of opaque fluids in diagnosis and treatment was advocated. No fatality had resulted from their injection in a large series of cases. The results of operations on the Fallopian tubes were disappointing, about 10% success being all that could be achieved. Hormone therapy was discussed. Finally, the use of contraceptives by the newly wed couple was deprecated. Donor insemination was discussed and condemned.

Mr. Albert Sharman (Glasgow) reviewed the literature on fatalities following tubal insufflation, and described experimental work on rabbits. While there were many records of deaths due to the use of air or oxygen, there was so far no record of a death when carbon dioxide had been employed. Taking one minute to inject air into a rabbit's vein, death ensued after the injection of 3 ml.; in the case of oxygen, death occurred after 4 ml.; and when carbon dioxide was used, after 15 ml. or more. Physiologists had stated that the occurrence of embolism due to carbon dioxide was almost impossible because of its rapid absorption. Mr. Sharman said that he had now done about 3,000 cases at the Royal Samaritan Hospital, Glasgow, and there had been no death as a result of tubal insufflation with carbon dioxide. There had been three cases of pelvic infection, two of which were severe but not fatal.

Mr. Kenneth Walker (London) devoted his remarks to a consideration of the means by which the sperms were transported to the ovum. He stressed that the husband was almost entirely responsible for the success or failure of the sperms to reach their goal. The three important factors were ejaculation, motility of the sperms, and penetration, or the condition of the cervical plug. It should never be assumed that ejaculation was satisfactory until careful inquiries had been made. Faults in the ejaculatory phase of coitus, though much less apparent, were almost as frequent as faults in the preceding phases. Ejaculatio praecox was not of great importance in considering childlessness. Absence of ejaculation was much more important, and had not received the attention it merited; it occurred, for example, in the man of low sexuality who suffered from latent homosexuality, fetichism, sadism, and so on. These cases required prolonged skilled psychotherapy, which even so was not always successful. Another type of male did have an orgasm but did not produce semen, probably because of neuromuscular imbalance, as semen was often found in the urine passed after the act. Mr. Walker was of the opinion that oligozoospermia was due to variation in the testicular contribution to the total bulk of the semen. He pointed out that a sheath specimen and a post-coital specimen from the same man might vary considerably. The post-coital test had not been given the prominence its value entitled it to receive. The quality of the sperms was of more importance than their number.

Mr. Percy Malpas (Liverpool) said that recurrent abortion was due to a multiplicity of causes, but that in some cases there was clearly a recurrent factor whose nature was unknown. He suggested that in the absence of any discernible disease to account for these cases a reasonable hypothesis would be that they were due to a recurrent failure of the nervous mechanism whereby uterine quiescence was maintained. In this connexion the lightness of the attachment of the placenta to the uterine wall in the early months of pregnancy was emphasized and the evidence in favour of this hypothesis was discussed. Emotional shocks were the most common cause of spontaneous abortion in healthy pregnancy. The analogous behaviour of other hollow pelvic viscera was described, and attention was drawn to the oxytocic effect of various purgatives. It was also important that the rate of growth of the uterus should be equal to the rate of growth of the ovum, otherwise "missed" abortion occurred.

Mr. Cecil Binney (Barrister-at-Law, The Temple) said it was plain that the law could not ignore artificial insemination. Artificial insemination *per se* was not a crime and it did not constitute adultery, which was important with regard to the law of divorce. The branch of law in which artificial insemination introduced most problems was that concerned with the inheritance of property. Usually it would be necessary for the child to forgo any inheritance. The only solution for this impasse was the abolition of all settled funds. The law of nullity was untouched by artificial insemination. It was most important that any doctor performing this operation should have the written consent of husband and wife.

There was a lengthy discussion to which Dr. Bethel Solomons replied. He said that carbon dioxide was the gas of choice for insufflation of the tubes. He was interested in the fact that Mr. Sharman had found it safe to insufflate in the premenstrual phase, when insufflation could be combined with biopsy of the endometrium. He said that in recurrent abortion, in addition to the drugs usually used, he had prescribed, from the time when he was an assistant, antisyphilitic remedies in non-syphilitic cases. He wondered how Mr. Malpas could "keep the nervous mechanism quiet." Methods such as the adoption of babies, which had psychological effects, were important. To keep a patient in bed for months to prevent a miscarriage was not always practicable. Dr. Solomons concluded by pointing out that there was no greater proportion of abnormal babies in cured sterility cases than in ordinary pregnancies.

SECTION OF ANAESTHETICS

Wednesday, June 30

Anaesthesia for Chest Surgery

The president, Dr. Z. Mennell (London), was in the chair and opened the proceedings by pointing out that this was the first meeting of the Section of Anaesthetics since 1933. He was pleased to find that the British Medical Association no longer regarded anaesthesia as a branch of pharmacology.

Dr. Joan Millar (Newcastle-upon-Tyne) began the discussion on anaesthesia in chest surgery. She stressed that new methods of anaesthesia, resuscitation, and team work were largely responsible for the progress in thoracic surgery. The anaesthetist must be a good bronchoscopist and must have a practical knowledge and experience of the special problems. The actual agent used was of less importance. Careful pre-operative preparation and assessment of the respiratory and cardiac function of patients were necessary and for this purpose differential spirometric recordings were occasionally of value. She advocated local analgesia for endoscopies, drainage of empyemata and lung abscesses, and in the surgery of pulmonary tuberculosis. In thoracoplasties it was advisable to examine the patient radiologically on the day of operation to detect any unsuspected spread of the disease. After premedication with "omnopon" and scopolamine, brachial plexus and paravertebral nerve blocks were performed and the subscapular region infiltrated. A unilateral vagal block at the base of the skull was useful in extrafascial apicolysis to ensure freedom from persistent coughing. In the subsequent stages of thoracoplasty the analgesia might have to be helped out by light chloroform anaesthesia. For lung resections general anaesthesia was advised. The "wet" case was best controlled by bronchial tamponage. Endobronchial anaesthesia was less certain and more difficult. The respiration must be controlled or assisted to prevent paradoxical movement and mediastinal "flap." While the use of curare offered many advantages there was always a danger of residual post-operative weakness and reduced tidal exchange, which predisposed to post-operative collapse. The anaesthetic methods for operations on the oesophagus, heart, and great vessels were described. During heart surgery cardiac irregularities had been controlled by the application of procaine to the epicardium or by the intravenous injection of 2 ml. of 2% procaine. The necessity for the complete restoration of normal respiratory physiology at the close of every operation was stressed; there must be no hesitation in performing a bronchoscopic aspiration if necessary. Post-operative *x*-ray examinations were important to detect the presence of a pneumothorax or of atelectasis. Finally it was most important to replace blood as it was lost during the operation and not to wait until a large transfusion had to be given. In the elderly a sudden large transfusion might result in pulmonary oedema.

Dr. E. H. Rink (London) followed with a short paper based on his experience of the surgical treatment of 50 cases of congenital pulmonary stenosis. There had been 8 immediate deaths, 3 at the time of operation and 5 within six hours of the operation. One child had died since leaving hospital and 4 cases had been inoperable. Post-operative complications such as atelectasis and pleural effusion were common. The pre-operative condition of these children was poor. They were very cyanotic, and had intense clubbing of the fingers and no exercise tolerance. They were undersized and had no resistance to infection, so that it was often necessary to operate in the presence of respiratory infection. Despite all this they tolerated anaesthesia and operative trauma well. The operation might last five or more hours, and, no matter how bad the child's condition, hope must not be abandoned until the child was dead. Premedication was by means of oral "nembutal" or rectal thiopentone. A slow induction with cyclopropane or a little ether was followed by the instillation of a few drops of amethocaine over the back of the tongue and the insertion of a cuffed endotracheal tube. A plain tube with a pack could be used. Anaesthesia was maintained with cyclopropane or ether, controlled respiration being employed throughout; curare had proved of great value in this respect. The dangerous periods were when the pleura was opened, when the pulmonary artery was clamped to make the anastomosis, and after the anastomosis had been completed when the circulation had some difficulty in adjusting to the new conditions. The excellent results of the operation more than justified it. Dr. Rink then described the operation of valvulotomy, for which he had anaesthetized four cases, with one post-operative death. Adrenaline was the best resuscitant in all these cases.

A lengthy discussion followed in which Dr. G. S. W. Organe (London) stated that he regarded local analgesia for thoracoplasty as an interesting exercise for the anaesthetist rather than as a procedure with advantages over general anaesthesia. He used a mixture of amethocaine 1:2,000 with procaine 1 : 400 and 1 : 300,000 adrenaline, but even 1 : 5,000 amethocaine worked well. He had never seen a bronchial tamponage or endobronchial anaesthesia performed without trauma, and for this reason postural drainage with suction was preferable. He did not think that post-operative atelectasis was related to "spill over," and considered that there might be some active contraction of the lung. Dr. R. F. Woolmer (Bristol) stressed the importance of always having a syringe charged with procaine ready to treat cardiac irregularities.

Dr. T. Cecil Gray (Liverpool) said that he did not consider that Dr. Millar had given any cogent or conclusive reasons why local analgesia was to be preferred to general anaesthesia in thoracoplasty. It was not a valid argument to say that the cough reflex was maintained during the operation; for a cough to be effective there must be a rigid chest wall, which was not the case during thoracoplasty. Curare appeared still to be under suspicion, but it enabled these procedures to be carried out under a very light narcosis, thus ensuring an active cough reflex at the end of the operation. In heart surgery under cyclopropane anaesthesia cardiac irregularities were seen less often if curare was used, because deep anaesthesia was avoided. Under modern conditions post-operative pulmonary atelectasis probably had little to do with the anaesthetic. It usually occurred about the fourth day after operation and was frequently associated with an oedema of the bronchial mucous membrane.

Dr. H. H. Pinkerton (Glasgow) also supported the use of general anaesthesia for thoracoplasty, stating that curare relaxed the scapula and ensured freedom from laryngeal spasm during periosteal stripping. In assessing these patients before operation too much significance must not be attached to the vital capacity. Thoracoplasty had been successful in cases in which the vital capacity had been as low as 800 c.cm. provided that the physiotherapists had reported that the patients had good control of their respiration. His experience with "blue babies" had been unfortunate, as his three cases had been desperate risks and had ended fatally.

Dr. Edith Gilchrist (London) questioned the advisability of intubating tuberculous patients, and Dr. J. G. Bourne (London) wondered whether the cardiac upset that occasionally followed vagal block might not be due to the adrenaline which would be in the injected local anaesthetic, although he did not consider that there had been an intravascular injection in the cases which he had seen. The president wound up the discussion with a query about the method of sterilization of solutions of morphine given intravenously.

In reply Dr. Joan Millar again stressed the arguments in favour of local analgesia for thoracoplasty. The cough was perfectly effective during the operation if the apex of the lung was supported by the surgeon. Answering a question about the best mode of anaesthesia for the repair of congenital tracheo-oesophageal fistulae, she considered that it was important for the anaesthetist to keep an eye on the investigations from the beginning. She had seen a great deal of trouble in these cases due to the passage of barium into the air passages. Lipiodol was a better opaque medium. She preferred local analgesia and a posterior approach to the mediastinum which did not entail opening the pleural cavity. Oxygen was given under pressure; a small blood transfusion was also needed. Dr. Rink, replying to Dr. G. F. Rawdon Smith (Liverpool), considered that death must be assumed if there was no response to cardiac massage within five minutes. Irreversible cerebral changes consequent upon a period of anoxia must be remembered.

Abdominal Relaxation

With Dr. C. H. Budd (Cambridge), a vice-president, in the chair, Dr. C. B. Lewis (London) read a short paper on abdominal relaxation. He defined abdominal relaxation as the attainment of complete muscular flaccidity, complete peritoneal flaccidity, minimal respiratory movements, and contracted viscera. Relaxation was essential in abdominal surgery and was made difficult because the tone of the accessory muscles of respiration persisted even after other muscles had become relaxed, and because the posterior fascial sheaths of the abdominal muscles were adherent to the peritoneum. Further, respiratory movements still caused embarrassing movements of the viscera. Dr. Lewis reviewed the main agents and combinations commonly used to achieve abdominal relaxation, and said that spinal analgesia fulfilled perfectly all the desiderata. Contrary to expectations, curare had not replaced other methods, and he described the technique of induction of anaesthesia with thiopentone, followed by the intrathecal injection of heavy "nupercaine." Endotracheal intubation was performed, and general anaesthesia maintained with a further small dose of thiopentone and if necessary nitrous oxide or cyclopropane. He had experience of 100 cases in which gastrectomy was performed under this method of anaesthesia. Headaches were rare following it, and in the unconscious patient marked falls in blood pressure did not occur. He limited his initial dose of ephedrine to 3/4 gr. (50 mg.) and emphasized that the results of spinal analgesia depended not on the drug used but on the particular technique and the maintenance of full oxygenation. Ether, although safe, was being infrequently used because of the disturbed convalescence which followed, and cyclopropane alone gave poor relaxation. Curare he considered a great advance, but it was too easy to give, and once it had been given the anaesthetist had lost control. He considered its use to be contraindicated in heavily built patients when the Trendelenburg position was to be employed. Intubation was a most valuable aid to relaxation, as it ensured a completely free airway. Such accessory aids as flexion of the patient's knees should not be overlooked.

In the discussion which followed, Dr. Agnes J. Gray (Preston) considered that the supplementary agents alone used by Dr. Lewis were sufficient for abdominal surgery without a spinal analgesia, especially if curare was used. Dr. R. F. Woolmer (Bristol) deprecated the custom of supporting the patient in the Trendelenburg position only by the knees. Compression of the calves predisposed to post-operative thrombosis, and also in that position the pelvis was tilted at an angle, putting the rectus abdominis muscle on the stretch and making the attainment of adequate relaxation almost impossible. Dr. B. Williams (Middlesbrough) said that as a gynaecologist he was interested both in relaxation and in the posture of the patient. He deprecated the use of shoulder rests. He had had a case of brachial plexus palsy, a complication made more likely by the modern tendency for the anaesthetist to keep an arm available for intravenous injections. He had found bromethol a useful basal narcotic and felt it facilitated subsequent relaxation.

Dr. H. R. Youngman (Cambridge) had used "myanesin" with some success, especially in anal operations, when stretching of the anus produced deep respiration but did not result in any troublesome reflex laryngeal responses. It might be that the solvent at present employed for this substance contraindicated its use. Dr. R. W. Cope (London) stressed the dangers of tragic sequelae following spinal analgesia, with heavy damages being awarded later against the hospital, surgeon, and anaesthetist. For these reasons he had turned to curare with thankfulness. Dr. R. Jarman (London) had experience of spinal analgesia in 18,000 cases, and said that the late Dr. Sebrechts, of Bruges, had employed it in no fewer than 30,000 cases. It would be folly to condemn such a useful method too lightly. The results were invariably better when an endotracheal tube was passed.

Caudal Extradural Block

Dr. G. C. Steel (London) said that caudal extradural block had been employed for assessing the outcome of sympathectomy in cases of hypertension. "Metycaine" 1½% was used and the segmental level of the resulting analgesia checked against the fall in blood pressure. This method gave a more accurate forecast of the likely results of operation than the usual tests, including high spinal analgesia, which caused complete loss of muscle tone and consequently impaired the venous return.

Paravertebral lumbar sympathetic block gave good results in the treatment of phlegmasia alba dolens, but so did caudal block. Sympathetic vasoconstrictor impulses caused spasm of the arterioles and venules in this condition, and the caudal block released this spasm and restored the normal fluid exchange. This method had also been applied successfully in the treatment of a case of glomerulonephritis with hypertension and pulmonary oedema, and in cases of anuria. Convulsions in cases of eclampsia could be controlled in this way, but it was essential that the patient should be closely observed for any circulatory collapse which might be dangerous in this condition. Caudal analgesia was a useful alternative to spinal block in surgery and had been tried in many pelvic operations. It was especially useful in vaginal hysterectomy because of the good perineal relaxation and relatively avascular field. He recommended it, too, for analgesia for the termination of pregnancy in cases of pulmonary tuberculosis. Finally, as a nerve block for the relief of the pain of pelvic carcinoma it had proved of great value. In these cases 40 to 60 ml. of "proctocaine" was usually given, although to obtain complete relief intrathecal injections of alcohol might be required.

Dr. A. R. Hunter (Manchester) pointed out that the results of sepsis following sacral block were as disastrous as the meningo-myelitis which might follow intrathecal injections, and Dr. H. J. Brennan (Manchester) stated that collapse was not uncommon after caudal anaesthesia. Dr. T. Cecil Gray (Liverpool) objected to the procedure because of its complete unpredictability. The block often went too high, resulting in a severe fall in blood pressure and collapse of the patient.

Intubation in Infants

This meeting of the Section ended with a short discussion, opened by Dr. R. W. Cope (London), on "When to intubate in babies and children." After reviewing the anatomy of the infantile larynx and stressing the deep anaesthesia required for intubation, he warned against the possibility of passing the endotracheal tube into the right main bronchus. The criticism that the thickness of the tube diminished the air entry did not seem valid except when it was obstructed by drops of mucus. Trauma with subsequent laryngeal oedema was a very real danger. He considered that babies and children should be intubated (*a*) in the treatment of asphyxia neonatorum and for any surgical operations on the newborn; (*b*) for abdominal operations such as those performed for congenital pyloric stenosis, duodenal atresia, or intussusception during the first few weeks of life; and (*c*) for operations during the first months of life for cleft lip and cleft palate. In the latter cases a tube made of a coiled spring was safest and most certain.

A discussion followed in the course of which Dr. R. F. Woolmer (Bristol) asked whether topical analgesia of the larynx was advisable in children, and whether the apparatus described by Humby and Hawksley was still in use for cleft palate. Dr. Agnes J. Gray (Preston) advocated the preliminary swabbing of throats to detect the presence of streptococci and urged the usefulness of intubation by touch in the newborn; not every maternity department had a laryngoscope ready. Dr. G. S. W. Organe (Westminster) questioned the wisdom of intubating babies more often than was absolutely necessary and deprecated the use of an endotracheal tube to maintain the airway when other methods would suffice. Dr. J. N. Fell (Colchester) urged the value of endotracheal intubation for tonsillectomy in children, pointing out that this was the only method by which a patient could be kept lightly anaesthetized for this operation.

Dr. R. W. Cope, in reply, felt that careful positioning of the patient for tonsillectomy was a better solution than intubation. As the latter procedure would have to be performed nasally it might cause bleeding and create difficulties when the adenoids had to be removed subsequently. He had urged intubation during anaesthesia for Ramstedt's operation because this might not be a short procedure, and the presence of a tube allowed the anaesthesia to be lightened from time to time. He did not use topical analgesia in children because of the danger of toxic reactions, and did not consider that Humby and Hawksley's device was safe; not infrequently the metal parts were of the wrong curvature and the rubber tube became detached from them.

SECTION OF DISEASES OF THE CHEST

Wednesday, June 30

Bronchial Carcinoma

After Dr. R. R. Trail (London), the president, had welcomed the speakers, Mr. R. C. Brock (London) opened the discussion on bronchial carcinoma. He said that the place of surgery in the treatment of bronchial carcinoma was now established. There was no need to argue it; it had placed bronchial carcinoma among curable diseases. It was still a terrible disease, and operation was possible in a few cases only; it was therefore very important that diagnosis should be made early and patients be referred for prompt treatment. Although the ultimate act of treatment was in the surgeons' hands, the greatest responsibility and the best chance of saving life lay in the hands of earlier medical attendants. They must therefore consider early manifestations.

As in all diagnosis of malignant disease, the most important thing was to think of it. Any departure from normality in a patient of cancer age should suggest it. The leading symptom was cough; there were also pain, haemoptysis, and signs of infection. The average duration of the disease was six months; therefore it was no good wasting three to four months making a diagnosis. Radiography was of the first importance, including *x*-ray examination of a barium-swallow; bronchoscopy next.

The cases that he had seen (1941–7) numbered 666; 75 (11%) of these were operable. Earlier series (1943) had shown 8% of 224 cases. There had been steady improvement each year; thus the 1947 operability rate was 21%. That improvement was due partly to increased skill in removal, but chiefly to earlier diagnosis.

The total number of patients operated on was 96, of whom 18 had died from the operation; 78 had survived. Twenty-eight had died since; 50 were still alive—the longest period of survival being nine years; 8 had survived over five years.

There was still room for improvement, and some of this would come from a more complete operation: for example, the latest natural development was block-dissection pneumonectomy. The greatest need was still early diagnosis and early reference for skilled investigation. In that matter the general practitioner and the consultant physician were of greatest importance.

Mr. G. A. Mason (Newcastle-upon-Tyne) emphasized the large amount of work cancer of the lung entailed for thoracic surgical clinics. His clinic had dealt with nearly 1,000 cases in the past 15 years. He found that there was likely to be as much as five months' delay in submitting the patient to treatment after the patient had seen a doctor. Cases were still held as "suspicious" when investigation rather than observation was required.

"Delayed resolution" and "unresolved pneumonia" should be regarded as carcinoma until proved otherwise. Empyema was certainly not a contraindication to pneumonectomy, nor was a blood-stained effusion. The operability figure was now about 20%. Out of 202 cases of pneumonectomy there were 9 surviving 4 years, 2 surviving 5 years, 2 surviving 6 years, and 1 surviving 7 years.

Mr. Mason advised *x*-ray therapy for all undifferentiated growths whether operated upon or not, for those with malignant glands found at operation, and for growths in those who declined operation, those unsuited for it, and those found inoperable on exploration

Mrs. E. L. G. Hilton (London) said that an analysis had been made of the inoperable cases of cancer of the bronchus seen at University College Hospital, London, during the years 1940–6 inclusive to assess the benefit received by those patients who had had *x*-ray treatment. Three hundred and sixty cases of cancer of the bronchus had been seen. Of these, 147 had been too ill, and the disease had been too advanced to receive irradiation treatment. Only 89 had been considered suitable for a radical course of *x*-ray treatment, the remaining 114 receiving only palliative irradiation. Ten cases received post-operative treatment after pneumonectomy.

The speaker emphasized the following factors influencing the selection of suitable cases for a radical course of *x*-ray treatment: the general condition of the patient; the extent of the growth; the presence of sepsis, of tuberculosis in association with cancer, or of an effusion. She mentioned the importance of ascertaining whether the full effect of the first course of treatment had taken place before treating the case again, and stressed the difficulty of differentiating between post-irradiation changes in lung tissue and recurrent growth. Planning the areas of irradiation was facilitated by having a report of the microscopical examination.

The average duration of life of the patients who were too ill for *x*-ray treatment was between 9 and 10 weeks; of patients who had received palliative *x*-ray treatment, 5 months; of patients who had had a radical course of *x*-ray treatment and who had died, 15 months. The duration of life so far of the 10 patients who had received a radical course of *x*-ray treatment and who were alive on Jan. 1, 1948, was 38.4 months. The results observed from *x*-ray treatment in that series of cases suggested that good palliative results could often be obtained, and in a few cases life could be definitely prolonged.

Dr. R. R. Trail stressed the importance of a cough that occurred at regular times with increasingly short periods between. Mr. F. Ronald Edwards (Liverpool) emphasized the frequency of the disease—10% of all carcinomas were bronchial in origin. For early diagnosis he stressed the importance of the radiologist, who did a great deal if he reported that bronchial carcinoma could not be excluded. The diagnosis could not be made on physical signs. Bronchoscopy was a simple and important investigation to be done early.

Dr. F. H. Young (London) said that the condition of patients who had undergone pneumonectomy was surprisingly good. A radiograph reported on as within normal limits did not exclude a carcinoma in the early stage in every case and should not discourage bronchoscopy if there seemed any indication for it. Mr. C. F. Mayne (Plymouth) inquired about methods of controlling pain in inoperable cases and whether in empyema complicating carcinoma the empyema should be drained before an expected pneumonectomy.

Mr. Brock in summing up said that often direct questioning and observation of the sputum were required about haemoptysis. Cordotomy or sympathectomy might be needed to relieve pain in cases not responding to drugs. The pleura should usually be drained in empyema complicating carcinoma. Carcinoma might present as an abscess, and the abscess might require draining before the lung was removed.

Surgery of Congenital Heart Disease

Dr. J. M. H. Campbell (London) opened the discussion. He said that in cases of patent ductus arteriosus the diagnosis was easy when there was the typical continuous murmur. If there was no cyanosis and no complicating factor and some sign or symptom of enough disability, operation should be advised in all patients between 7 and 20. After 20 the risk was somewhat greater, but where symptoms justified it operation should be considered.

In cases of coarctation of the aorta the operative risk was considerably greater, perhaps approaching 20%. Where there were symptoms in patients under 20 and a considerable rise in blood pressure the expected duration of life justified this risk if the patient wished it. Where the symptoms first appeared and the diagnosis was first made in patients over 20 the natural prognosis was much better, but after that age, as the risk of operation was considerably increased because of the early development of atheroma, operation was rarely indicated.

With cases of cyanotic heart disease it was much easier to know when an operation was advisable, for the disability was so much greater and the prognosis so much worse. It was not always easy to make a diagnosis that would tell if operation was feasible. Fallot's tetralogy was the commonest condition that could be helped by the Blalock–Taussig operation. If cyanosis had not been noted in the first 18 months of life it seemed unlikely that there could have been much right-to-left shunt, and that diagnosis was therefore unlikely. The presence of a diastolic murmur suggested some complication, though it might be a patent ductus helping the circulation of the lungs. The most critical evidence was that there should be an absence of dilatation at the pulmonary artery and an absence of pulsation in its branches on radioscopy, because this might suggest that the circulation of the lungs was already adequate—and the whole purpose of the operation was to increase the blood-flow to the lungs.

The usual operation was an end-to-side subclavian pulmonary anastomosis on the side *opposite* to the aortic arch. In successful cases the results were excellent, and a patient who could do nothing might quickly walk a mile or more and remain a normal colour, except on an especially cold day or after heavier exertion. In his series of patients rather less than one-sixth had died, and in one-sixth an anastomosis had not been found possible or the improvement was only slight to moderate. In two-thirds of the patients the results had been extremely good, and, except for a little increase in the size of the heart in most of them, there seemed to be no drawback to the artificial patent ductus. A direct attack had been made on the pulmonary valve by Mr. Brock, and this operation held out considerable hope.

Mr. T. Holmes Sellors (London) believed that the uncomplicated case of patent ductus arteriosus was a surgical matter. The danger of infective endocarditis was very real, and heart failure was certainly not unknown. Marked relief was obtained on removal of the turbulence. Cardiac invalidism was a condition to be deplored. In children under 5 their small size and the occasional spontaneous closure of the ductus contraindicated operation. Healthy and symptom-free adults might reasonably elect to await events. If any cyanosis was present the ductus should probably not be occluded. The results of ligature or division of the ductus were highly satisfactory. One death in 71 cases had occurred. Many of the so-called recanalizations were probably instances of an additonal cardiac lesion. With one exception he had used a simple ligature with non-absorbable material in the form of a Ballance staly-knot.

The indications for surgery in cases of coarctation of the aorta were still being evolved. He had advised operation only where the symptoms of hypertension, such as headache and dizziness, had been really marked.

In cases of pulmonary stenosis the results of the operation evolved by Taussig and Blalock were excellent in a number of patients. At the very least it provided some years of more than tolerable life. The Potts operation was appealing. Both Holmes Sellors and Brock had described an operation for stenosis in the pulmonary valve.

In the discussion Mr. R. C. Brock said that he believed there was a large measure of agreement between physician and surgeon that cases of patent ductus should be operated upon. In coarctation of the aorta more information was needed about the indications for operation. The results of the Blalock operation had been good. It was difficult to reconcile closing a patent ductus in one type of case and making a patent ductus in another type of case. Valvulotomy might have possibilities. Dr. A. Rae Gilchrist (Edinburgh) said that 7 years was the optimum age for operation on patent ductus or on coarctation of the aorta with symptoms.

Mr. G. A. Mason said that the risk of recanalization must be small if the patent ductus was adequately ligated. Tape seemed rather uncertain. He used four double ligatures of linen thread, size 20. He had had no recurrences, although his series was small because of his reluctance to do the operation in uncomplicated cases. His own preference in cases of pulmonary stenosis was for the Potts type of operation, the aortic pulmonary anastomosis being much simpler than the Blalock operation.

SECTION OF ORTHOPAEDICS

Wednesday, June 30

Lesions of the Intervertebral Disk

With the president, Professor T. P. McMurray (Liverpool), in the chair, an introductory paper by Prof. Norman M. Dott on the neurosurgical aspects of intervertebral disk lesions was read by Mr. G. L. Alexander (Edinburgh). One of the penalties of modern civilized life was man's liability to develop spinal weaknesses, one of the most important of which was the protrusion of intervertebral disk substances. Although this took place commonly in front and at the sides of the vertebral bodies, it was chiefly important as a crippling problem when occurring posteriorly into the spinal canal or vertebral foraminae. The incidence of such lesions was considered to be approximately 300 new cases per million population per annum; insurance statistics tended to show that this was a conservative estimate. In the aetiology the sudden assumption of violent activity either in the form of military training or athletic pursuit in people of otherwise sedentary habit seemed to be of particular significance. The importance of a national "keep-fit policy" in youth was very great. Local trauma, particularly under conditions of surprise, was perhaps the most common story. Trauma of all kinds was of significance in at least half of the cases studied. Males were involved twice as often as females, in whom pregnancy increased the liability to such lesions, and the age incidence was chiefly between 20 and 50, though the youngest patient operated upon was 15 and the oldest 72. The commonest syndrome was the association of lumbago and sciatica with a history of remissions, paraesthesiae, and paresis. Lumbago or sciatica might be found alone. Scoliosis was common and particularly a tendency to assume a pronograde stoop. In half of the cases radiological narrowing of the disk was found, and in a similar proportion there was a significant rise in the protein content of the cerebrospinal fluid. Bilateral syndromes might be produced by a single disk protrusion or by a double lesion of the same disk, or by single lesions of two disks. In some cases multiple disk lesions were discovered. The protrusion might be so marked and so affect the cauda equina that the case might become a surgical emergency. Skeletal peculiarities of congenital origin sometimes caused difficulty in localization but otherwise were not of significance in relation to treatment. There were a variety of pathologically different protrusions of nuclear substance. Some formed only a small lateral nodule; others dissected relatively far from the disk; others were seen as necrotic masses which penetrated the dura and produced a considerable granulation-tissue reaction. Yet others might escape detection in the posture most usual for operative exposures.

At operation precise haemostasis was necessary; complete removal of all nuclear tissue was performed aided by special gouges and nibblers copied respectively from those used by the dental surgeon and the otolaryngologist. In disk lesions associated with spondylolisthesis the loose neural arch was removed, the prominent edge of the lower vertebra smoothed off, and after the disk had been removed bone chips were put in its place and tibial grafts inserted posteriorly.

In diagnosis the particular conditions to be differentiated were various forms of epiduritis, tuberculosis involving the disk, primary radiculitis, and conditions simulating disk protrusion, nuclear granulomas, and other tumours. Diagnosis localizing the affected disk was correct in 93% of cases; errors were generally due to the presence of multiple protrusions and second interventions were necessary in 2% of cases. At Edinburgh they were prejudiced against the use of opaque myelography, but now that innocuous materials were again available it was an open question.

Operative results showed no mortality, and 85% of the patients were fit for their former or equivalent jobs. Fusion operations were not necessary. Forcible manipulation was dangerous and epidural injection did not help. The chief question posed was that of the part which rest should play in conservative treatment.

Mr. Norman Capener (Exeter) emphasized the importance of lesions of the intervertebral disks other than posterior protrusion. The assumption that practically every patient suffering from lumbago and sciatica was "a disk lesion" was dangerous. There were no unmistakable signs clinically or radiologically of posterior protrusions. Disk protrusions were associated with underlying physical and psychological defects and caused local disturbances and, sometimes more important, a widespread physiological disintegration—all of which indicated the overwhelming need for thoroughly efficient conservative treatment. In advocating the use of the plaster jacket for achieving physiological control, reinforced where necessary by traction upon the pelvis in recumbency, the speaker stated that not only was it the best method for all three elements of the problem but it also enabled the separation of the group likely to require operation. Operation should rarely be required. Statistics were given which showed that, if such treatment and an efficient programme of after-care were applied early, the end-results were at least as good as those in some published groups of cases in which operative treatment had been practically the only method of approach.

Mr. R. H. Young (London) who had had experience of 791 laminectomies done before August, 1947, relied upon the history

of backache or sciatica or both; this was recurrent, with complete freedom from pain between attacks. With such a history, if forward bending was restricted and sideways bending free, if straight-leg raising was limited and radiological examination negative for other conditions, then the patient had a disk lesion. In the first attack rest in bed in the position of greatest comfort was advised. In the less severe cases the patients would get better whatever was done so long as physiotherapy was avoided. In operative treatment he performed a complete laminectomy with exploration of the last two lumbar disks. Protrusions at both levels were found in 12% of cases.

Col. D. McVicker (Belfast) felt that manipulative treatment which was not forcible had an important place in early treatment. A great deal could be done without anaesthesia and without hurting the patient to relieve spasm. Many men could be got back to work within a few days. Surely this was better than doing nothing for two months and then operating.

Dr. Rowland Hill (London) discussing brachial neuritis, in which nowadays mechanical lesions of the cervical intervertebral disks were considered important, said that the pendulum had swung too far from the infective factors and that in sciatic pain also they would do well to keep in mind such infective factors whatever mechanical lesion might also be present.

Mr. A. L. Eyre-Brook (Bristol), although favouring conservative treatment, did not believe that it should be persisted in too long. If after four weeks in a typical case relief was not forthcoming, operation should be undertaken. Mr. J. Hardman (Sheffield), while appreciating the importance of conservative treatment, thought that it was not fair to compare results with those of neurosurgical operations, which were usually performed for cases in which orthopaedic treatment had failed. Nevertheless out of 200 cases operated upon and studied by an independent observer two-thirds were improved, though half of the cases operated on had some persistent weakness or aching in the back. This latter point was also noted by Mr. H. H. Langston (Southampton). He made a plea for the use of epidural saline injections for recurrent attacks not of severe degree. This technique probably relieved by separating adhesions between the nerve roots and the protrusion.

Mr. N. Ross Smith (Bournemouth) mentioned the urgent need for impartial investigation and the publication of results of operative treatment. He felt much more caution should be exercised in assessing results. More attention should be devoted to other lesions of disks. In all these cases the problem was not one primarily of operation but of the adjustment of posture and physical activity, of physical retraining and occasionally of mechanical support. Major A. Hale, discussing the results of operation in the Army, said that the duration of symptoms made no difference to the results, and that, while these were satisfactory in that 80% of patients were back at full work within a year, only 3% were completely free of all symptoms. Mr. B. Whitchurch Howell (London) believed that the younger the patient and the greater the pain the sooner should laminectomy be performed; the reverse applied to the older patient.

Mr. Bryan McFarland (Liverpool) agreed that intensity of pain was the important criterion but thought that a large proportion of cases were cured by conservative treatment. The president, Professor McMurray, said he had been startled by the briefness of the clinical examination which Mr. Young had thought suitable. He mentioned a number of conditions which might be overlooked. He believed manipulative treatment should play an important part in treatment, for many of these problems were in fact due to back strain.

Injection Treatment of Osteoarthritis

Mr. Grant Waugh (Sunderland) showed a film of his lactic-acid injection treatment, details of which have already been published. The treatment was based upon the observation of alteration in *p*H which occurred in the haematomata associated with fractures, which at a certain stage of healing became relatively acid. In rheumatoid arthritis the joint fluids became relatively alkaline (*p*H 7.8) and in osteoarthritis more so (*p*H 8.) Injections were given weekly or fortnightly and varied in amount from 1 ml. in an interphalangeal joint to 2–4 ml. in the wrist and shoulder, 5–10 ml. in the knee, and 10–15 ml. in the hip joint. Before injection the joints were aspirated and afterwards manipulation and frequent active exercises were carried out by the patient. The results in osteoarthritis and in the less active forms of rheumatoid arthritis were most encouraging in the greater mobility achieved and in the relief of pain. A group of patients with bilateral joint lesions had been treated on one side by injection and physical therapy and on the other side by physical therapy alone. The relief on the side injected was such as to cause the patients to clamour for similar treatment on the other side. Radiographic control had shown that, in the speaker's experience, if the lateral approach was used the difficulty of getting the injection into the hip joint had not been great.

SECTION OF PATHOLOGY AND BACTERIOLOGY

Wednesday, June 30

The Rhesus Factor

With the president, Professor H. R. Dean (Cambridge), in the chair Professor D. F. Cappell (Glasgow) opened a discussion on the recent advances in our knowledge of the Rh factor. He surveyed the pioneer work in this field and paid tribute to the original work done by the Cambridge workers in the president's department. He pointed out that the haemolytic diseases of the newborn which resulted from the iso-immunization of an Rh-negative mother were increased enormously when she had been additionally immunized by an incompatible Rh blood transfusion. The dangers of such a transfusion to women of child-bearing age could not be too strongly stressed. Pregnancy heterospecific in the ABO groups rarely caused haemolytic disease, and in fact the iso-immunization of Rh-negative mothers in heterospecific ABO pregnancy was significantly less than when mother and child belonged to the same ABO group. Prof. Cappell then discussed the difference between complete and incomplete antibodies and disagreed with the suggestion that icterus gravis was caused only by the complete antibody. After reviewing the terminology he went on to show that anti-C and anti-D sera reacted differently in large surveys and there had now been demonstrated variants C^w, C^u, and C^v, D and D^u, which could not be separated. Several case histories of families with homozygous and heterozygous fathers were described, including one in which the 18th child was the first affected. He refuted the suggestion that Rh incompatibility could cause mental deficiency apart from kernicterus or diffuse cortical staining.

Dr. P. L. Mollison (London) stressed the importance of the direct Coombs' test in the diagnosis of haemolytic disease of the newborn, supplemented by accurate serial estimations of haemoglobin, bilirubin estimations, and examinations of a blood film for the degree of erythroblastaemia. Most cases showed a correlated degree of anaemia, hyperbilirubinaemia and erythroblastaemia in the cord blood. He regarded 3 mg. of bilirubin per 100 ml. as the borderline of abnormality, and showed that most cases had more than 10 nucleated R.B.C. per 100 leucocytes. If the blood was examined a few hours after birth the findings were altered by the rise in haemoglobin values that occurred in all infants who were allowed to recover their placental blood and by the rise in bilirubin concentration which always took place in the neonatal period. Haemolytic disease caused death at four stages: (1) *in utero* at any time after the 24th week of pregnancy; (2) at delivery or within 12 hours of it. (They were both associated with severe anaemia, and death from cardiac failure occurred); (3) 2–4 days after birth—then infants had involvement of the central nervous system and were deeply jaundiced; (4) 7–14 days after birth—these were more frequently the result of poor production rather than excessive blood destruction. Dr. Mollison then described the technique of exchange transfusion after premature termination of pregnancy, which he called the most rational treatment for this disease. The proportion of Rh-positive cells remaining at the end of the transfusion depended on the infant's initial red cell count and the amount of blood exchanged: 400 ml. usually sufficed for a 90% exchange if the donor blood had at least 5 million R.B.C. per cu.mm. He had an overall mortality on this procedure of 28% with kernicterus in only 6% of the survivors. As methods and prognosis varied so much no comparison of results was yet possible.

Dr. R. R. A. Coombs (Cambridge) then described an investigation of haemolytic disease in newborn foals. He had

investigated six cases in which the symptoms were absent at birth with progressive lethargy, weakness, pallor, and haemoglobinuria. This latter was the first sign in the severe cases. Because of lack of knowledge of blood groups of horses and grouping sera the use of compatible blood in treatment was very difficult. In testing for antibody his direct antiglobulin sensitivity test using rabbit anti-horse-globulin serum was positive in all the cases and negative in all the controls. All the animals affected showed profound anaemia, no erythroblasts were found in any of the cases, and there was no reticulocyte count higher than 0.04%. Histologically there was no evidence of extramedullary erythropoiesis, and this was attributed to the long gestation period of 11 months. His colleague, Dr. Herd (Cambridge), had attempted to produce the picture of haemolytic disease of the newborn in rabbits experimentally and had encouraging results.

Occasional Papers

With Professor W. G. Barnard (Vice-President) in the chair Dr. A. B. Bratton (London) discussed the histological findings in the thymuses of 70 cases of myasthenia gravis. These had been removed at operation and had considerably influenced the course of the disease in the majority. Comparison with controls of similar age groups showed that the weight and shape of the gland were the same and did not support the theory of persistence of the gland in myasthenia. There was, however, a qualitative difference in that the myasthenic thymuses showed denser concentrations of lymphocytes in the islets with a small number of lymphocytes in the medulla and a structure resembling a germ centre in the cortical nodules. These were present in 66 of the myasthenic glands and in only 3 of non-myasthenic control glands, suggesting that the thymus was reacting rather like lymphoid tissue than like epithelial tissue. Tumours were present in 13 out of 70 cases of myasthenia gravis, and these showed a varied picture with different amounts of small cells resembling lymphocytes and large pale foamy cells which were probably epithelial. The tumours could be called lymphoepithelioma of the thymus, and occasionally metastasized.

Dr. M. H. Gleeson-White (Cambridge) described four cases of *H. influenzae meningitis* treated with streptomycin. Three made uneventful recoveries, but the fourth, after a slow but favourable response, became resistant and died in spite of full doses of penicillin and sulphamezathine, to which the organism remained fully sensitive throughout.

Dr. K. C. Dixon (Cambridge) showed that when the supply of glucose and oxygen was cut off from a cell it used its residual sugar, and when no further energy was available intracellular constituents were liberated into the surrounding tissue. Thus stored red cells liberated their potassium as soon as the available sugar was used up. This potassium, being toxic, might cause damage to nearby cells early in disease processes. The main effect was produced experimentally by adding 20–30 milliequivalents of potassium. Professor Dorothy Russell (London) thought that if this were true a spherical and perhaps eccentric effect would be seen in the brain when cells were deprived of blood supply, whereas in fact a laminar appearance was present parallel to the surface of the brain.

Dr. N. H. Martin (London) examined the principles of electrophoresis and demonstrated electrophoretic patterns in normal and abnormal plasma. On physico-chemical data the purified albumin molecule should be the ideal protein for the treatment of shock (unassociated with blood loss) and generalized oedema because of its high solubility, low viscosity, and high osmotic pressure. The globulin fraction when broken down showed a high concentration of antibodies in the γ group, a lipid-binding ability in the α and β globulins, and an iron-binding capacity in a specific member of the β-globulin family.

SECTION OF PHYSIOLOGY AND BIOCHEMISTRY

Wednesday, June 30

Recent Work on Proteins

The president of the Section, Professor A. C. Chibnall (Cambridge), opened a discussion on recent work on proteins and its medical applications. At the turn of the century, when the late Sir William Hardy started to develop the colloid chemistry of proteins, only a few workers were interested. In contrast, there were to-day amino-acid analysts, physical chemists, *x*-ray crystallographers, and workers in many fields of clinical medicine who were concerned with protein research. Interest was widespread, and the pace of research continued to quicken. Of the many topics which could be discussed that day he mentioned two. Side by side with the work on the differentiation and characterization of the individual proteins of tissues, the chemist was gaining some insight into their chemical structure. The overall amino-acid composition of many such proteins was now known, and efforts were being made to determine the order in which the residues occurred in the peptide chains, the number of such chains in the molecule, and the means whereby the chains were held together. The molecule of insulin, for example, consisted of four chains held together by the S-S linkages of cystine, while the number of chains in the various haemoglobins showed species differences which were paralleled by their immunological specificities. The development of blood transfusion during the war gave a great impetus to work on the plasma proteins, especially in the laboratory of Cohn at Harvard. A new and elaborate scheme of fractionation had made available large amounts of serum albumin in concentrated solution for clinical use. Many fractions, representing *inter alia* the blood-grouping globulins, complement, gamma-globulins, enzymes, and hormones, were also available in bulk for more extensive study, and certain of these had already been shown to be of clinical value. The present need was for more fundamental research, which would undoubtedly lead to advances in medicine.

Dr. J. A. V. Butler said that the great advances in the knowledge of proteins in the last decade were due to improved methods of both isolation and characterization. Now that the conditions of crystallization of proteins were better understood, a large number had been obtained in the crystalline state, including enzymes, hormones, serum proteins, toxins, and antitoxins. In order to determine the purity of these products and to investigate their properties powerful physical instruments had been evolved, for example, the ultracentrifuge of Svedberg, the electrophoresis apparatus of Tiselius, and the improved diffusion apparatus of Svensson and Longsworth. These and other methods permitted a fairly full and accurate analysis of the protein constituent of a mixture and enabled the properties of the individual proteins, such as molecular weight, size, shape, and charge, to be determined. He gave a brief review of these methods and the results achieved.

Plasma and Blood Derivatives in Treatment of Burns

Dr. L. Colebrook and Mr. P. Dallas Ross presented a paper on the value of serum or plasma transfusions in the treatment of severely burned patients. Dr. Colebrook had observed more than 150 cases so treated, many of them children with 10% or more of the body surface burned, the rest adults with 15% or more. In general, the plan adopted had been to forestall haemoconcentration by setting up a drip transfusion as early as possible if the burns were extensive and by keeping it going for twenty to thirty hours. After that time the permeability of the capillaries was getting back to normal, and fluid was being reabsorbed from the tissues. The amount of serum or plasma required for each patient was a matter for careful judgment and constant clinical observation, supplemented by frequent determinations of the degree of haemoconcentration. Transfusion could easily be too timid; on the other hand, it was not difficult, especially with children, to overload the circulation. None of the formulae proposed for regulating the amount necessary should be relied upon. As much as 15 pints had sometimes been required for an adult with extensive burns.

The authors also described experiments bearing upon the value of fibrinogen and thrombin in securing the better adhesion of skin grafts. Grafts of about the size of a sixpence were fixed with dermatome glue on two wooden blocks, and the cut surfaces were then painted with solutions of thrombin and fibrinogen respectively. After opposing these two surfaces, and waiting a few minutes for the clot to join them, the breaking strain was determined with a simple torsion balance. With no glue between the grafts (or a drop of saline) the breaking strength was usually 20 to 30 g.; with thrombin and fibrinogen it was usually between 80 and 200 g. One technical point was that a watery solution of thrombin tended to run off the recipient surface before the graft with its fibrinogen could be

placed in position on it. This could be overcome to some extent by using a more viscid solution of thrombin—e.g., in 5% casein. Grafts applied with a glue thus made had taken as well as ordinary grafts. Clinically there appeared to be a definite advantage in the use of a thrombin-fibrinogen glue.

Protein Hormones

Professor E. C. Dodds gave a brief description of the properties of protein hormones, the first of which to be clearly recognized was insulin. Another important group of protein hormones consisted of those classified under the general term "gonadotrophins," obtained either from the pituitary and blood serum or from pregnancy urine. Others less clearly defined chemically were parathormones, the hormones of the parathyroid glands, and the other pituitary hormones such as the adrenotropic, pancreatotropic, and so on. An entirely new aspect of biologically active proteins or their derivatives had been opened up by the work of Woolley on streptogenin. Professor Dodds discussed the production of a growth factor for bacteria and animals by the treatment of a protein hormone such as crystalline insulin with proteolytic enzymes.

Professor G. Pickering said it had been known for over a century that there was a close connexion between kidney disease and raised blood pressure. Fifty years ago a protein was discovered in the kidney which on injection into animals raised arterial pressure. This substance, renin, had been shown to be an enzyme (hypertensinogen) which split from a constituent of the plasma globulins a small molecule, hypertensin. Hypertensin was the effective pressor substance. When the renal artery was constricted in animals hypertension resulted, probably from the release of renin into the circulation. The hypothesis that some forms of human hypertension were due to a similar mechanism was attractive, but up to the present unsubstantiated. Renin probably played a part in the regulation of arterial pressure.

The final contribution to this discussion was by Professor N. F. Maclagen, who discussed diagnostic tests based on changes in serum proteins. An important type of change was an increase in gamma-globulin content with or without a fall in albumin. This formed the basis of the flocculation tests, such as the mercuric chloride reaction of Takata and Ara, formol gel, calcium chloride coagulation band (Weltmann), cephalin cholesterol, colloidal gold, thymol turbidity and flocculation, sharlach red, cadmium sulphate, and zinc sulphate turbidity tests. He reviewed the physio-chemical background of these tests. From clinical reports the thymol, gold, and cephalin-cholesterol tests appeared to be the best for providing easy and rapid methods of demonstrating the type of change mentioned, which was found principally in diseases of the liver and in certain acute and chronic infections. A desirable combination would be thymol plus one other test. A single accepted test for excess of gamma-globulin would be the ideal. This work had many possible applications in protein chemistry and in immunology.

SECTION OF PREVENTIVE MEDICINE

Wednesday, June 30

Preventive Medicine under the National Health Service Act

With the president, Dr. G. F. Buchan (London), in the chair, a symposium on preventive medicine under the National Health Service Act, 1946, was opened by Dr. H. Joules (London), who spoke on the role of the hospital. He said that the district hospital must serve the local community and have the closest contact with local health authority services and with health centres. Preventive medicine was needed in midwifery, gynaecology, ear, nose, and throat work, in geriatrics, and in tuberculosis work. There must be close liaison between all the groups working on the problems of child health—with the emphasis on health rather than disease. The present system of notifying diseases should be reviewed, and notification should be followed by prompt action. The district hospital should be a common meeting-ground for all health workers in the area, with responsibility for the postgraduate instruction of the practitioners who would ultimately serve in the health centre practices.

Dr. W. N. Pickles (Aysgarth) said that the public health service began with the general practitioner. A period in general practice should be recommended for all young doctors, especially those destined for this service. Health centres might help to form a bond between general practitioners and the public health service. Child-welfare centres should be there, and in certain instances child-welfare and school-children examinations could be conducted by general practitioners, and could also be a part of the training of a paediatrician. Antenatal examinations, wherever possible, should be undertaken by a practising obstetrician, whether a general practitioner or a trainee specialist. The Act correlated the work of the general practitioner, the health visitor, and the district nurse. Health talks should be given by general practitioners. The link between medical officers of health and general practitioners in epidemiology should be strengthened.

Dr. E. D. Irvine (Dewsbury) said that under the Act the medical officer of health was administratively responsible for social medical work, including health education. General practitioners could be helped by health visitors and other social workers. It was important to realize the functions of health visitors, such as health education, social amelioration, "intelligence." Information about sickness should be more freely transferable, and its collation in health departments was necessary. Social care and the after-care of sick persons, including the mentally ill, were important new duties for the medical officer. Health education was the key to the prevention of illness, and mass surveys and measures directed to the problems of ageing might be important.

Mr. H. J. McCurrich (Hove) suggested that the casualty department of a teaching hospital provided the most important material for the instruction of undergraduates. It was as difficult to be really efficient in general practice as it was in any specialty. Suitable postgraduate courses were essential. The medical officer of health should be head of a special department of preventive medicine within the walls of the hospital, and should leave the sterilizing atmosphere of the town hall for the more stimulating society of his colleagues.

Dr. F. Gray (London) said that the real aim of preventive medicine was to keep people well—not to prevent them from contracting one disease while leaving them to acquire another. General practitioners in the future would require a different education, and there would have to be closer co-operation between all sections of the profession.

Prof. R. H. Parry (Bristol) spoke of the value of the health centre as a common meeting-ground for all sections of the profession, including ancillary workers. Some overlapping of administration under the National Health Service Act was inevitable, and even desirable.

Dr. Jean M. Mackintosh (Birmingham) thought the training of the consultant paediatrician in preventive medicine should take place at the same time as he was obtaining his hospital experience. Local authority medical officers should not merely be given the opportunity of attending hospitals, but should be given responsibility for patients.

Dr. J. F. Warin (Leeds) referred to "social priority" in hospital admissions, and the importance of leaving final decisions to the medical officer of health, particularly in maternity cases and in cases of chronic illness and infectious disease.

SECTION OF DERMATOLOGY

Wednesday, June 30

Occupational Dermatoses

With the president, Dr. C. H. Whittle, in the chair, Dr. John T. Ingram (Leeds), opening the discussion, emphasized that the occupational dermatoses should be approached along general medical lines and not regarded as something outside the range of ordinary medical practice. The medico-legal complications which beset industrial affairs, the scientific aspect, and the statistical approach seemed to obscure the essentially human character of these diseases. The whole range of health and activities of the patient both in his home and in his leisure hours as well as at work must come under review. Occupational factors concerned the physical and chemical nature of the materials with which the worker came in contact, but regard

must be paid to prophylactic and cleansing procedures, to the atmospheric and other physical characters of the environment in which the man worked, and to the social, psychological, and economic aspects of his position. There were three groups of occupational dermatoses: first, peculiar affections related to particular trades or processes; secondly, traumatic dermatoses produced by gross irritants which would damage the skin of any normal subject exposed to them; a third group was essentially constitutional in character and related to the susceptibilities and fragilities of the individual who might break down under long-continued wear and tear of the skin or who might develop a peculiar personal sensitiveness, with resulting dermatitis. The importance of a patch-test in contact dermatitis was stressed and attention drawn to the necessity for treatment of a simple, bland, and protective character. Consideration should always be given to the general health of the patient and to the circumstances relating to his breakdown. It was important that the patient should have the nature of his disease fully explained to him. Charts showing the incidence and age of onset and water-colour illustrations of industrial dermatoses were shown.

Dr. Sibyl Horner (London) said that she appreciated Dr. Ingram's point of view on the essentially human character of the skin infections due to occupation. It was with this aspect in mind that she had concentrated first and foremost on the prevention of industrial dermatitis and more recently on the reablement of those who were the unfortunate subjects of this condition. Of the broad divisions—selection, protection, inspection, and cleanliness—into which the preventive measures fell, the one most likely to be overlooked was inspection. This was really the key to the success of the other protective measures and made early treatment with all its advantages possible. More use might be made of the principle of minimal contact with skin irritants; this principle, coupled with graded exposure gradually increasing in amount, had also been applied with success in the war to weed out susceptibles on the manufacture and filling of explosives. Reablement of cases of industrial dermatoses was still in its infancy, but it was clear that only by careful attention to this aspect could the present distress and disappointment to the individual and the economic loss to the nation be avoided.

Dr. John C. Belisario (Sydney), mentioned a few of the less common conditions encountered in Australia. Solar keratoses and carcinomata were seen particularly in those engaged in outdoor occupations—policemen, seamen, farm workers—and were admitted by insurance companies as industrial hazards. Prophylactic measures related mostly to clothing, but protective agents such as quinine tannate were helpful if used regularly. Dermatitis from mites was seen in those handling figs, dates, cheese, coconuts, and copra. Scrub itch attacked the legs, and mites from grass and soil and from poultry and starlings also gave rise to urticarial rashes. A similar dermatitis from mites might result from the handling of grain, straw, mattresses, and hyacinth bulbs. Dr. Belisario also referred to dermatitis from such different types of wool as glass wool, mineral wool, and rock wool.

Dr. J. Warnock (Leeds) stressed the importance of friction and mechanical injury in provoking dermatitis. He found that only 10% of claims were in fact serious cases of industrial dermatitis and in only 10% of cases was recurrence common. Many men continued at work, sometimes for years, in spite of the presence of dermatitis. He regarded seborrhoeic dermatitis as industrial if the sites involved were sites of contact and injury. Many cases of pompholyx were industrial in origin. He did not find that those who recovered from dermatitis in one trade relapsed if they went into a different class of work.

Dr. Geoffrey A. Hodgson (Cardiff), speaking on adaptation and recovery in occupational dermatitis, said that complete mechanization to eliminate contact and efficient selection to exclude dermatitis-prone persons were utopian ideals. The skin had to be exposed to irritants and to wear and tear. A rough assessment from a series of cases showed that 70% of cases of oil-dermatitis occurred after five years' contact; over 50% of miners' traumatic dermatitis of the legs occurred between 50 and 65 years of age; and housewives' dermatitis from soap and cleansers appeared most often between 41 and 50 years of age. The primary factor of resistance was an intact horny layer. A miner's skin broke down from mechanical injuries, and 15% of oil-dermatitis cases were preceded by skin injuries. The balance between skin breakdown and epidermal re-formation might be upset by trauma, high concentration of irritants, age (in miners), and the menopause (in housewives). There was a natural tendency to re-form the horny layer after dermatitis. In the later stages this was called "hardening," which might occur, according to Schwartz, in spite of men continuing at work; 14% of miners had recovered from previous attacks of dermatitis. After clinical cure, time was needed for full hardening. Bad adaptation and unemployment might cause recurrences from anxiety and habitual scratching, which interfered with the natural tendency to repair. As a corollary of full adaptation suitable work with freedom from unsettling economic hardship was necessary. Chronic incapacity was more likely to be produced by long unemployment than by returning to work too early. Hardening might occur in the face of greater external irritation than was at present thought possible. Medical officers in industry should investigate this point. Patients with dermatitis should be encouraged to return to work at the earliest possible moment to allow convalescence and hardening to occur at work; suitable employment must be provided. First-aid measures for dermatitis and for minor skin disorders should be taught in factories.

Dr. W. J. O'Donovan (London) said that he had read the first paper on exogenous dermatitis to be reported in the *British Medical Journal*. He wanted to stress, however, other factors demanding attention, and instanced discharge from the Services on psychiatric grounds and the repetition of fears in the patient's recital.

If a rash came and went while the patient was working, and if parts normally covered were affected, work was not likely to be the cause. Cupidity, revenge, and the desire for retribution might be important. Patients were apt to have fantastic ideas about skin sensitivity. Young girls with a dermatitis which persisted quite often had a pronounced mother fixation. Many an honest diagnosis needed retrospective correction. Factory work was habitually labelled dirty and held responsible for dermatitis in the male. The same conditions gave rise in the female to a skin disease termed eczema—an unjustifiable sex distinction. The "patch-test" was very open to influence by suggestion and he had produced positive reactions with human sweat and normal saline.

Dr. A. Thelwall Jones (Widnes) said that occupational dermatitis was the most important occupational disease. The normal routine clinical examination gave no indication of the workers likely to develop some skin disease. He classified cases of industrial dermatitis into two groups: (1) cases of abrupt onset caused by a known irritant; (2) cases of idiopathic character. Prevention was difficult because of lack of knowledge of the disease process. A clean industry and good environmental conditions were desirable. He put in a plea for more hospital beds for these cases to allow of adequate treatment in the early stages.

Dr. R. M. B. MacKenna (London) stressed the importance of rehabilitation. There were two classes of case: (1) early cases, which might affect either "green" or "salted" labour and in which it was desirable to keep the patient at work; (2) relapsing cases, in which fears about security played an important part. Where the affection appeared in "green" labour the opportunity of selection arose. In "salted" labour contact should be avoided and not resumed until the skin had hardened again. Desensitization by limited contact might be tried. In relapsing cases all the resources of rehabilitation therapy, physical and psychological, should be employed. Experience of rehabilitation in relation to dermatosis in the Army was encouraging.

Dr. Robert Forbes spoke of the importance of respecting the confidential character of the relations between doctor and patient. He discussed the "medical witness of fact" and the expert witness and suggested the desirability of expert witnesses contributing to the solution of these problems by conference rather than in the Courts. Exaggeration and theorizing were to be avoided in giving evidence.

Others who contributed to the discussion were Drs. S. W. Fisher (London). F. F. Hellier (Leeds), F. A. E. Silcock (Leicester), J. E. M. Wigley (London), I. M. Scott (London), J. B. L. Tombleson (Bedford), and E. C. Dawson (Derby). In the afternoon a number of clinical cases were demonstrated and discussed.

SECTION OF CHILD HEALTH

Thursday, July 1

Neonatal Mortality and Neonatal Morbidity

The president, Sir Leonard Parsons (Birmingham), began by drawing attention to the new name of the section as reflecting the widening conception of paediatrics. Dr. Agnes R. Macgregor (Edinburgh) then opened the discussion on neonatal mortality and morbidity. She said that the basic cause of neonatal death was related to the mother. Paediatric study of the subject was concerned with the effects on the child of maternal conditions and of the hazards of delivery. Reliable post-mortem examinations and close collaboration between pathologist and clinical worker were essential for successful study.

The majority of neonatal deaths fell into one of four categories—developmental defects, asphyxia, intercranial haemorrhage, and infection. More than one of those might occur in association, and it was sometimes difficult to decide the principal cause of death. Prematurity, when of extreme degree, could be the sole cause of death. On the other hand prematurity was overwhelmingly important as a predisposing factor in almost every other condition causing death in the newborn. Atelectasis was almost always due to asphyxia and was rarely itself the cause of death. Death in cases of asphyxia might follow depression of the respiratory centre, or haemorrhage. Inspiration of foreign material was a common contributory cause of asphyxia. The inhalation of vernix was of particular importance in this connexion.

Fatal haemorrhage might take place within the cranium, in the suprarenals, in the lungs, or from the surface of the liver. Intracranial haemorrhage occurred in five forms. Direct trauma gave rise to subdural haemorrhage and extradural haemorrhage, which was rare. Intracerebral, subarachnoid, and intraventricular haemorrhage were usually due to asphyxia. Subarachnoid and subdural haemorrhage of moderate extent could be survived. It was difficult to estimate the severity of intracranial haemorrhage which was incompatible with life. Dr. Macgregor emphasized that haemorrhage was not always present when suspected on clinical grounds.

Most neonatal deaths of infants who survived the immediate risks of birth were due to infection. Premature infants predominated among those dying from infection; and of all deaths from infection 90% were accounted for by pneumonia, thrush, and other infections of the alimentary tract. Fundamental research was required to further the prevention of infections which persisted despite precautions.

Professor L. S. Penrose (London) referred to the emphasis given by statistics to hygienic measures as having had the greatest influence on infant mortality. This influence had been less evident in relation to neonatal mortality. Congenital abnormalities contributed considerably to neonatal mortality and were themselves subject to prenatal influences. Separation of these influences according to whether they were hereditary or environmental was difficult to justify. Factors of heredity and environment were not independent. Developmental events should be considered in relation to the time sequence of potential influences. Malformations might have as their source recessive genes of ancient origin, recent "point" mutations of single genes, chromosomal disruption, adverse intrauterine environmental influences, or a combination of these factors. Usually it was not possible to determine the different causes from human data.

The problem was to foretell the likelihood of a malformed child being followed by children similarly deformed or malformed in some other way. Professor Penrose had found in an investigation into over 100 children born after the first case of malformation in the sibship that 5% had been similarly malformed and that 6–7% had other types of serious malformation. The pedigree only occasionally gave an important clue. A condition transmitted regularly from parent to child suggested a single dominant gene, and was usually slight in character. Rare recessive genes were sometimes detected as a result of parental consanguinity. A negative family history was not proof of the absence of a genetic factor. Foetal infection and antigenetic factors arising from rhesus incompatibility might prove to give rise to congenital malformation. Study of the subject was complicated by the effects of maternal age in relation to foetal death. Foetal malformations were common at the extremes of maternal ages.

Dr. Winifred Young (Epsom) said that the difficulties of the premature infant immediately after birth and the high mortality from asphyxia and cerebral haemorrhage were related to the immature function of the circulatory, respiratory, and nervous systems. The relationship between immature function and mortality from infection was less clear. Lack of immunity, a tendency to under-nutrition, alimentary intolerance, and low renal function were all of significance. The premature infant was able to digest a diet containing her full nutritional requirements. During the first 7–10 days protein intake should be not less than 4.0 grammes and the food should provide not less than 120 calories per day. Where intake was less than that in infants weighing less than 3½ lb. frank signs of under-nutrition might appear and might increase susceptibility to infection.

Professor N. B. Capon (Liverpool) said that physical and "biochemical" trauma might follow the process of delivery. Physical trauma of apparently trivial degree called for accurate diagnosis and treatment. Concussion and compression should be considered where the intracranial contents had been subjected to stress. From the paediatric point of view especial importance attached to the times when the membranes ruptured. Obstetric practice was overcoming the risks associated with breech delivery and anoxaemia. Professor Capon mentioned placenta praevia and maternal analgesia as causes of biochemical trauma. Avoidance of prolonged labour and readier resort to caesarean section were reducing the paediatric risks attached to placenta praevia. The risks to the child did not justify discouragement of maternal anaesthesia except in special circumstances. The risks were small where care was exercised in the choice and administration of analgesics and anaesthetics.

Dr. J. L. Henderson (Edinburgh) described infection as clinically the most important cause of death. Institutional care was associated with special risks. Premature infants were particularly exposed to risk on account of their long stay in hospital. Staphylococcal infection was virtually endemic in many hospitals and might assume a variety of clinical forms. Thrush was met with more commonly in hospital than domiciliary practice and could give rise to oesophagitis and fatal gastritis. The condition of the stools was of little help in the early diagnosis of gastro-enteritis. Listlessness and anorexia were early symptoms. Among urgent needs were improved socio-economic circumstances, extended mothercraft training, improved instruction of students, more prompt reporting of infections by nursery staffs, and the dispersal of mothers and babies in small units. The trend towards increased institutional midwifery was not in the interests of the infant.

Dr. W. R. F. Collis (Dublin) agreed with Dr. Macgregor on the need for pathological studies. At present our knowledge was ahead of our skill in practical management. Dr. Beryl D. Corner (Bristol) said that the risk of intracranial injury in premature infants was lessened when episiotomy was employed at the time of delivery. Rapid aspiration of the mouth and pharynx immediately after delivery was of great importance. The procedure was facilitated by using a laryngoscope for suction under direct vision when the infant was premature. Dr. W. N. Leak (Winsford) drew attention to the work of the late Prof. Barcroft. Cardiazol–ephedrine given subcutaneously was of value where neonatal asphyxia was present. In staphylococcal skin infections good results were obtained from a fine suspension of sulphathiazole.

German Children: a Nutritional Study

In the afternoon Dr. E. M. Widdowson (Cambridge) and Dr. Dean (Cambridge) gave a demonstration of the results of a nutritional study carried out over twelve months on children in a German orphanage. The children concerned had had the bread and cereals of their German rations replaced by bread supplied by the investigators *in unlimited amounts* and the flour of which had been reinforced with calcium and vitamins. The bread provided 75% of the calories given each child, the remaining 25% being mainly in the form of vegetables. Daily bread consumption by older children was in the neighbourhood of 800 g. The total weekly milk consumption of each child ranged from 250 to 500 ml. (about 1/2 to 1 pint). Children included in the examination were subjected to clinical examinations at intervals and to radiological and biochemical

examinations. There was altogether striking improvement in the general physical condition of the children fed on this diet. Height and weight increased coincidentally with great rapidity. Tissue tone, posture, physical activity all showed amazing betterment. There were no digestive upsets and no alterations in bowel habit. Children showing the results of the investigation were demonstrated.

Professor R. A. McCance (Cambridge) said that this study had demonstrated the possibility of securing excellent growth and health on very little milk and little animal protein.

SECTION OF OCCUPATIONAL HEALTH

Thursday, July 1

Human Relations in Industry

With the president, Dr. Donald Stewart (Birmingham), in the chair, Sir George Schuster (Chairman, Panel on Human Factors, Cabinet Committee on Industrial Productivity) said that there were two dangers, that human relations might be treated as a means to an end, and that the subject might be studied in isolation. The ends of industrial activity were to achieve excellence in production, to provide a satisfying activity as the foundation of a good life, and to fit into a satisfying pattern of human society. Good human relations could only be founded on the treatment of each human being as someone of value, whose welfare must be regarded as an end in itself. Workers must be able to find interest, self-satisfaction, and happiness and something more than a way of earning a living in their work, and this was an essential part of the manager's task in human relations. Efficiency in management, both technical and commercial, was an essential condition of good human relations.

The greatest need of modern industrial society was to make industrial employment something which was seen as an essential part of a satisfactory human life; this would not be obtained unless managements were singlehearted in their pursuit of it and efficient at their own production job. Industrial employment must fit in harmoniously with the worker's social state. There was no single solution, and one must beware of cut-and-dried schemes, for the problem needed fresh effort every day. Here there was a great opportunity for a valuable contribution by the works medical officer, whose aim must be the creation of positive health. A full-time medical officer should be employed wherever possible and he should be treated as a member of the management team, taking part in all management discussions; the medical view should be taken on every point in the total plan of plant, premises, and so on. The fact that a medical officer was a specialist should not exclude him from appointment to the highest administrative post if he desired it and had the necessary abilities and qualities, and he must have broad concepts of his own work. Would it be possible to form a group of industrial medical officers with whom his panel or he himself could personally discuss these problems?

Human Relations and Occupational Health

Dr. Elliot Jaques (London) discussed the reasons why preventive measures were not used effectively on the shop floor. Was it because people were irresponsible? Were they innately incapable of taking care of themselves? In the day-to-day practice of the industrial medical officer it often seemed that working people were not concerned about their own health. How could this phenomenon be explained? How could people be expected to behave responsibly? The medical officer was up against the general situation in industry, and had to accept the attitudes in that community. The attitude of the present time, based on history and past experience, was suspicion and mistrust. The attitude to new methods for coping with disease would be determined very much by morale inside the works and would be judged by the way in which the medical officer went about introducing these methods. If any scheme was brought down to the shop floor as a *fait accompli*, the medical officer was behaving within the accepted pattern of management and it would be resented. He would not be providing opportunity for the workers to participate in handling their own affairs, and certainly the workers' health was their own affair as well as the management's affair. Recent work in the social centres had implications for industrial medical practice so far as general principles were concerned. Before a group would cope with a difficulty, the group had to feel the difficulty; it was not easy to introduce health measures into a firm unless the workers desired them. All a physician could hope to do was to help people to help themselves, to clarify the problems for them, and help them find therapeutic measures to improve themselves, and until a working group themselves felt a need for coping with its own health problems the medical officer might just have to sit around until the workers came to him for assistance. It was his responsibility to point out the dangers of, for example, lead poisoning and to make himself available to work with the people concerned to develop methods for overcoming these dangers. In other words it was working with people rather than doing things to them or for them which was crucial.

Education in Human Relations

Dr. R. F. Tredgold (Cambridge) said that to see a thing from the point of view of a speaker one depended on logic, to see it from the point of view of the listener one realized that a certain connexion or quality was required to create an emotional reaction in the mind of the listener. It was difficult to bridge that gap and see both aspects at the same time. The fact had to be accepted that logic was not the only factor, sometimes the acceptance of an idea depended much more on the emotional relationship between the speaker and the listener, whether or not the listener always trusted the speaker, and also in the way in which the idea took shape in the listener's mind. It was a question of perspective; one believed much more firmly in an idea and acted upon it if one was under the impression that it was one's own idea. For an idea to be successful the listener must add something to it on his own; and when trying to teach, the whole thing must not be put at once, the listener must arrive at part of the idea himself. Learning occurred as much as a result of the teacher's attitude and behaviour as of his words. The pattern of inter-personal relationships and inter-group relationships was not based on the religious and philosophical views of the past twenty-five centuries, but much more on the historical facts of the one century since the industrial revolution.

Mr. Jerome F. Scott (Harvard, U.S.A.) gave details of a course set up at Harvard to study the way of looking at human situations and problems, and the way a leader should think about them. By cold statistical fact it had been proved that the most effective leader was the one who thought of his people as ends in themselves rather than means to his economic ends. This was not so simple as it might seem. There was the illustration of the incentive system working effectively in one firm and not in another. With the introduction of an incentive there was needed a change of a real sort in the human situation. If the working group did not trust their leader it would be ineffective. Individual behaviour sometimes had to be used as clues—a good example of that was absence from work. A worker when questioned would give the reason which he thought would satisfy his questioner. There might be a variety of reasons contributing to his absence. An important factor was how much he wanted to be at work. If there was a group which had more absences than another it could only be explained by looking at the total situation of the group—morale, working conditions, and medical factors. The absences were but an index of the total situation. If a supervisor could avoid emotional upsets on his own part and looked behind unpleasant words and behaviour with an inquiring mind it was much easier to get to the bottom of the situation. If feelings were straightened out facts would take care of themselves.

Dr. W. E. Chiesman (London) stressed the necessity of converting the rank and file of the medical profession to interest themselves in the working environment of their patients and their fitness for it, and the necessity of the education of youth for industry. Dr. Brian Pringle (Dublin) said that with the suggested incorporation of the industrial medical officer into the management team there was a danger that clinical medicine might be neglected and it was essential that the medical officer should carry on a clinical practice in the factory.

Professor Ronald E. Lane said that the industrial medical officer must receive some special training for this work. Sir George Schuster had drawn attention to the large number of small units which would need medical advice if any national industrial medical service was introduced, and this problem would not be solved without the help of the general practitioner, who

would need reorientation to be able to do it effectively. It was the duty of the teaching centres to provide this. Mr. V. Wilkison (Croydon) suggested that a medical officer could be employed by a group of factories in a similar trade or industry, when he would become conversant with processes, operations, job appraisal, and the fitting of men to the job. Dr. J. A. L. Vaughan Jones (Leeds) said that until the management team had the confidence of the worker it would be difficult for the doctor to obtain his true place in industry. The idea of just sitting around was very good once the doctor had the people's confidence, but just sitting around would not gain their confidence.

Sir George Schuster, in reply, said that it was the medical officer's function to give general advice on the way in which industrial processes were carried out taking the medical point of view into account. He should be in close touch with the patient's panel doctor, but unless there was a good industrial atmosphere and complete confidence what he had suggested would break down. He had two major ideas in mind, that industry must be made more industrial-health conscious, and secondly that this industrial society had not evolved a satisfactory pattern of life. This would not come about until industrial leaders had a much greater consciousness of their social responsibilities, and amongst these he put responsibility for the positive health of their employees. The management team should not be regarded as completed unless it included a doctor who really understood the health side. What had been said showed that the conception of the functions of the industrial medical officer required further discussion and clarification. Not nearly enough thought had been given to it, and he hoped it would be possible to carry the discussion further.

SECTION OF OPHTHALMOLOGY

Thursday, July 1

Ophthalmic Complications in Obstetrics

With the president, Mr. O. Gayer Morgan (London), in the chair, Mr. F. A. Juler (London) opened a discussion on ophthalmic complications in obstetrics. He reviewed briefly Wernicke's encephalopathy, puerperal septic infections in the mother, and orbital haematoma, facial paralysis, and damage to the eyeball by instrumental delivery in the baby. He said that in contrast to these rare affections ecchymoses and retinal haemorrhage in the newborn were common. German measles during the early months of pregnancy was now established as a cause of congenital ocular malformation. In his experience retinal arterial obstruction, which he thought might possibly be due to spasm, occurred occasionally. In cases of hyperemesis gravidarum occurring in the first trimester Wernicke's encephalopathy with retinal haemorrhage might develop. The late toxaemias of pregnancy gave rise to toxaemic retinopathy, the most important ophthalmic complication of pregnancy.

In the classification of Prof. Browne and Miss Dodds there were four groups of toxaemias : (1) pre-eclamptic toxaemia and eclampsia ; (2) hypertension in pregnancy ; (3) chronic glomerular nephritis in pregnancy (nephritic toxaemia) ; (4) recurring toxaemia. In group (1) (Miss Dodds) there had been one instance of retinopathy in 46 cases of eclampsia and another single instance in 144 cases of pre-eclamptic toxaemia. In group (2) there had been 10 instances in 65 cases, and in group (3) 2 instances in 17 cases. In 30 cases of retinopathy he had observed personally, most had developed in the last trimester of pregnancy and 2 shortly after labour. Recently A. V. Hallum had claimed that ophthalmoscopically visible arteriolar spasm was present in all cases of pregnancy when the blood pressure had risen above 150/90. In 11 cases of late toxaemia the speaker had followed up after termination of pregnancy he had found it difficult to detect spasm or to assess irregularities in the vessels. In the puerperium optic atrophy from loss of blood and septic endophthalmitis were now rare.

In the newborn local penicillin therapy had proved specific for ophthalmia neonatorum. Its value as a prophylactic was less certain. Silver nitrate appeared to be harmless in the concentrations normally used. With adequate antenatal care and asepsis no prophylactic drops were needed ; in case of doubt silver nitrate should still be used.

Mr. Juler was followed by Mr. A. B. Nutt (Sheffield). He defined menstrual headache as that type of headache which was usually migrainous in character (i.e., unilateral preceded by teichopsia), frequently associated with nausea and vomiting, and devoid of ocular cause. It often occurred just before the menstrual flow and tended to disappear during pregnancy and at the completion of the menopause. Swelling of the pituitary body had been regarded as the causal factor, but there was also evidence of a disturbance in the anterior-pituitary–ovarian relationship, as shown by disturbances in the gonadotrophin content of the urine before and during an attack. Retention of sodium chloride with consequent oedema of the tissues within the enclosed cranial cavity had been postulated. Recently Zondek and Bromberg had shown that some of these patients were hypersensitive to the steroid hormones. They had obtained good results by specific desensitization.

Extra-genital bleeding (" vicarious menstruation " of the classical writers) was generally met at the beginning or end of the reproductive period, and was more likely to affect women with unstable vascular or nervous systems. The most usual site was the nasal mucosa, but other mucous membranes, including the conjunctiva, might be involved, when " bloody tears " resulted. Oestrogen deficiency and oestrogen excess had both been blamed. Progesterone had been shown experimentally to produce increased permeability of the capillaries in extra-genital tissues, and the skin capillaries tended to become more spastic as menstruation approached, dilating rapidly soon after the onset of the flow. Disturbances in capillary resistance just before or during menstruation had also been observed. A patient with extra-genital bleeding would therefore seem to have vasospasm and increased permeability of the blood vessels.

In the subsequent discussion the significance of German measles as a cause of congenital ocular defects was discussed by Mr. P. M. Moffatt (London), Dr. G. G. L. Stening, of Melbourne, Mr. J. H. Doggart (London), Mr. R. F. Lowe (Melbourne), and Mr. A. G. Cross (London). Aspects of hypertensive retinopathy in pregnancy were discussed by Dr. Jamna V. Dhurandhar (Bombay), Mr. A. N. Fergus (Hindhead), Mr. J. Berkson (Liverpool), Dr. E. G. Recordon (Cambridge), Mr. T. Keith Lyle (London), and Mr. I. Spiro (London). Dr. J. W. E. Cory (Bury St. Edmunds) and Mr. A. B. Nutt discussed congenital lacrimal obstruction in the newborn.

Contact Lenses

In the afternoon session, with the president in the chair, Mr. A. G. Cross (London) read a paper on " The Present-day Position of Contact Lenses." He said that a great advance had been made in 1933 when Josef Dallos published details of a method for taking moulds of the living eye. In spite of subsequent developments it was still impossible to order a contact lens for a patient and to promise that it could be worn with comfort throughout the day. The two causes of inability to wear lenses for long periods were discomfort, which was sometimes the result of a defective fit, and the development of oedema of the corneal epithelium (Sattler's veil). Of 1,850 patients, some of whom had had their contact lenses some years back, about one-third had ceased to wear them. Of those who continued to wear these lenses, about 30% were using them for more than eight hours a day and 60% for four hours or more. Nearly 40% of patients with keratoconus and monocular aphakia wore lenses for more than eight hours a day, while only about 25% of myopes did so. Recent developments had aimed at lessening discomfort and eliminating the Sattler veil. It would appear that fitting by stages, introduced by Dallos, would help to overcome some of the difficulties. There was more promise in the elimination of a Sattler veil by using a perforation in the limbal region, as described by Dallos, rather than by changes in the *p*H concentration of the fluid it produced in the contact lens. A fundamental problem, which would have to be solved before contact lenses could be widely used, was to shorten the time needed for fitting. The plastic lenses advocated by Frederick Ridley would seem to enable the lens to be prescribed at one sitting for some 75% of cases. Feinbloom since 1945 had advocated a departure from the " glove fit " to conical fitting, so that the contact lens lay tangential to the sclera at a small area of contact. Prismatic and cylindrical corrections could now be introduced.

This paper was discussed by Dr. Jamna V. Dhurandhar (Bombay), Dr. Margaret Dobson (London), Mr. J. G. D. Currie (Cheltenham), Mr. Arthur Lister (London), and Mr. A. B. Nutt (Sheffield).

In a paper on "Optical Aids to the Other Man's Job" Mr. J. G. D. Currie (Cheltenham) discussed the optical principles underlying a series of optical appliances.

Dr. B. P. H. Beattie (Norwich) gave a lucid account of Mendelian principles and their application to ophthalmology. He stressed in particular sex-linked inheritance, distinguishing between recessive sex-linkage, dominant sex-linkage, and partial sex-linkage. His paper was discussed by the president, Dr. Jamna V. Dhurandhar (Bombay), Mr. Arthur Lister (London), and Dr. Margaret Dobson (London).

The concluding paper was by Dr. Hugh Ryan (London), who spoke on "Nutritional Diseases of the Eye." He drew attention to the high metabolic rate and extensive capillary system of the retina. The suggestion made by Stannus that riboflavin deficiency caused disturbance of the capillary bed would therefore have special significance in relation to the retina. It appeared that some 5% of men in prison camps in the Far East suffered from nutritional eye troubles. The symptoms consisted in blurring of vision, difficulty in reading, headache, aching eyes, and photophobia. They appeared after 8 to 12 months of defective nutrition. In some patients fleeting scotomata and flickering of vision, or the appearance of haloes around lights, and monocular diplopia were observed; they were usually worse in the morning. In some reports oedema of the face had been stressed. Objectively the presence of central or paracentral scotomata was a constant feature. Under treatment Harold Ridley had observed the central scotomata breaking up to give paracentral remnants; that probably accounted for the difference observed in individual cases. Fundus lesions were usually slight, but multiple haemorrhages and generalized retinal oedema had been recorded.

Thiamine and other preparations containing the vitamin-B complex were considered effective treatment by most observers, but the actual fraction of the vitamin-B complex responsible was not yet known. The results of treatment depended largely upon the stage at which it was instituted. Such little pathological material as was available suggested that the underlying lesion was a primary ganglionic degeneration of the retina with a secondary degeneration of the nerve fibres; or alternatively a primary nerve-fibre degeneration with a simultaneous, or secondary, degeneration of the ganglion cells. Those findings suggested retrobulbar neuritis, though clinically there were differences in the symptoms of retrobulbar neuritis as compared with the condition seen in camps. On the whole the clinical and pathological evidence would be more consistent with a malnutritional retinopathy than with retrobulbar neuritis. In this connexion the capillary system of the retina and choroid helped to explain the symptoms.

SECTION OF NEUROLOGY AND PSYCHIATRY

Friday, July 2

Epilepsy of Late Onset

With the president, Professor E. D. Adrian, O.M., in the chair, Sir Charles Symonds (London) opened a discussion on "The Investigation and Treatment of Epilepsy of late Onset." He said that older writers concluded that in 10% of idiopathic epileptics the onset occurred over the age of 30. Recently the opinion had been expressed that in most cases of epilepsy beginning in adult life the cause was cerebral tumour. Of 400 consecutive cases referred for epilepsy and at that time presenting no clinical signs of a nervous lesion responsible for the fits the age of onset was over 30 in 130. In 74 of those, further investigation or observation provided an explanation: in 21 cases cerebral arteriosclerosis; in 13 cases previous migraine; in 11 cases cerebral tumour; and in 10 cases a positive family history were discovered. In 56 cases investigations yielded negative results. Of 13 cases with attacks of a focal nature 12 had been traced: 3 had died probably of cerebral tumour and another of unknown causes. Eight were known to be alive and well from two to fifteen years after the first fit; in two cases cerebral thrombophlebitis might have been responsible. Of 43 patients with generalized attacks three had so far proved to have cerebral tumours. In 28 others no signs of cerebral disease had appeared, and ten years had elapsed since the first attack in 19 of these. In all cases of epilepsy beginning over the age of 30 for which no adequate explanation could be found an air encephalogram and an E.E.G. should be included in the investigations. In patients with focal epilepsy the encephalogram, if negative, should be repeated at intervals if cases of tumour were to be recognized at an early stage.

Dr. Denis Williams, considering late epilepsy in the light of knowledge derived from the E.E.G., traced the changes which occurred after injury to the brain up to the onset of epilepsy. After simple trauma, primary changes, which were confined to the site of the injury, showed immediately in the E.E.G. They were completely reversible and resolved. At a later date, usually more than two months, secondary changes appeared in the E.E.G. They sometimes began at the site of the injury; frequently they were bilateral, symmetrical, and perhaps generalized. They were not related to the initial injury in the same way as the primary changes, and in about 50% of cases they were associated with epileptic fits. It was not yet possible to say how many cases in which secondary changes occurred in the E.E.G. later developed epilepsy. Changes of this nature offered some explanation of the failure of surgery to stop epilepsy when the causal lesion had been removed. The E.E.G. also suggested that in some cases the cerebral scar should be extirpated before the secondary E.E.G. changes had developed and the associated fits had begun. A study of those changes would do much to throw light on the processes which occurred in the brain before late epilepsy developed.

Dr. D. W. C. Northfield (London) said that, of a series of 139 patients in whom epilepsy developed after the age of 21 years, there were 99 cases of a space-occupying lesion (glioma, 53; meningioma, 17), 21 of other forms of organic disease, and 19 of "idiopathic" epilepsy. In the first group fits had occurred in some instances for very many years before other symptoms, while papilloedema was absent in no fewer than 41. A history of progressive deterioration of the various functions of the brain should arouse suspicion of a focal lesion. Where epilepsy was the only disturbance of function ancillary methods of diagnosis in addition to cerebrospinal fluid examination must be employed. Areas of calcification or abnormal vascular markings demonstrated by *x*-rays not uncommonly indicated the site and nature of a tumour. In the presence of raised intracranial pressure, ventriculography was preferable to encephalography, though the latter might reveal cortical atrophy. Cerebral arteriography was less dangerous than ventriculography, and in some cases a local collection of abnormal vessels indicated not only the site but the nature of a tumour. At little risk reliable information could be obtained about innocence or malignancy. When the nature of a space-occupying lesion was uncertain and explanatory craniotomy undesirable, aspiration of a small quantity of the tumour through a hollow needle introduced through a suitably placed burr-hole yielded material for histological examination which might suggest appropriate treatment. Of 17 patients with meningioma, epilepsy had ceased entirely in 7, while in 53 patients with glioma it had been abolished in only 3.

With regard to radiological examination, Dr. James Bull (London) said that in the majority of cases straight *x*-ray examination was of little value. Calcification of the pineal gland occurred in 50% of persons over 25, and displacement, if present, was of diagnostic value. The size, shape, and character of pathological intracranial calcification, when seen, would give a clue to the nature of the lesion. The bones of the vault should be studied for signs of meningioma or metastases, and, if no information was obtained from such an examination encephalography or angiography must be undertaken. Particular care must be taken to fill the temporal horns at encephalography, otherwise a tumour might be missed. By the percutaneous method angiography was a simple and reliable procedure. Even if all radiological examination were negative repetition might be desirable later. Dr. Macdonald Critchley (London) drew attention to various clinical points in distinguishing idiopathic and symptomatic epilepsy. In the former, petit mal frequently alternated with grand mal and the epileptic personality was usually present. Symptomatic fits often resisted average doses of sedatives. The value of the water–pitressin test should not be forgotten. A personal history of migraine was not a

satisfactory explanation of epilepsy developing in later life. Epilepsy did not occur in healthy old age; senile fits either had an arteriosclerotic basis or indicated senile dementia. Among symptomatic causes old infantile hemiplegia and the withdrawal of sedatives after prolonged sedation should not be forgotten.

Dr. Ronald Jones (Ipswich) drew attention to epilepsy complicating cardiac disorders and mentioned two cases in which fits had followed coronary thrombosis. Dr. S. Silverman (Birmingham) said that in a series of 26 cases of epilepsy beginning in the late twenties and onwards, 10 were associated with pregnancy and uterine disorders. Dr. J. D. Spillane (Cardiff) stated that idiopathic epilepsy appearing for the first time in a person over the age of 40 was not very uncommon. The attack was frequently of an unusual type without convulsion.

Senile Deterioration

In the afternoon Dr. J. H. Sheldon (Wolverhampton) opened a discussion on "The Early Recognition and Management of Senile Deterioration." He surveyed the symptoms, as distinct from signs and pathological changes, preventing 477 elderly people in a Midland industrial town from living full lives. Prominent among these was limited power of locomotion, with a maximum radius of half a mile. Such limitation might be occasioned by arthritis, pain in the feet, or dyspnoea, and the incidence of these was constant for each age group over 65; or by vertigo, fear of traffic, lack of desire, and general weakness, the incidence of which increased with advancing years. General weakness was the commonest single factor. It was usually first noted around the age of 70 and affected women more than men. Its aetiology was varied, but cardiac weakness played a large part in its production. Difficulty in locomotion in the dark, unexplained liability to falls, vertigo, and increasing deafness were symptoms frequently encountered over the age of 65.

Lack of interest, rambling speech, and suspicion were early signs of senescence, and their percentage incidence increased with age. The frequency of fear, depression, and loneliness was constant in each age group. So far as treatment was concerned, it was important to retain the old person's interest in life and to maintain as great activity as possible. Old people should be permitted to wear out and not rust out.

Dr. Macdonald Critchley (London) said that gerontology was neglected in this country until a decade ago. Recent interest in the subject was due to appreciation of several facts. The percentage of elderly people in the population was increasing. The facilities for the care of the aged were appalling. Compulsory retirement at 65 was depriving the community of a national asset. Research might shed light upon the essential nature of ageing and so conceivably lead to extension of the span of healthy life. Moderate living diminished this risk of early ageing, but abuse of alcohol and tobacco and sustained heavy work after 45 decreased the expectation of life. Indeed the length of life was inversely proportional to the rate of living. Wisdom offset decreased agility, and the elderly should continue in employment for as long as possible.

Mrs. A. V. Hill regarded senility as a very loose term embracing: (1) Senile dementia. These patients could only be dealt with in a manner suitable to younger insane people. (2) The natural ageing of people of weak intellect. Such patients were usually quiet and inoffensive. (3) The ageing of those, often gifted but somewhat unbalanced in their tempers, who shewed less tolerance and poise in old age. These were the cranks and they found community life difficult. (4) The simple senility of old age. These were ordinary people whose minds and bodies were wearing out unaccompanied by any specific disease. The early signs included forgetfulness, silence, repetition, irritability, and lack of control of bodily functions. Bowel consciousness was a common and unexplained characteristic. Lying permanently in bed surrounded by people of similar mentality was always undesirable and, in treatment, the aim should be the maximum of freedom. The old person should do as much as possible for himself and he should take risks even to the extent of losing his way.

Dr. Trevor H. Howell (Purley) reviewed his findings in a series of healthy Chelsea Pensioners. The range of temperature was wider than in early life, many registering only 96° or 97° F. The pulse rate was variable ranging between 50 and 100 per minute. Contraction of the pupils to light was present in 64% and to accommodation in 44%. Tendon reflexes became increasingly difficult to obtain with age and the ankle jerks were only elicited in 30%. Plantar responses were normal in 95%. Joint position sense was usually normal, but vibration sense showed several variations. Many, though they could behave rationally, had dulled perceptions and slow mental processes. Physical treatment of disabilities should precede other forms of therapy, and general rehabilitation should include remedial exercises, simple games and occupational therapy. Once an old person's self-respect had been restored, much had been done to retard the process of mental and physical dissolution. Dr. Felix Post (Edinburgh) thought that the early emotional reactions of aged people should be looked for and treated. It was desirable that senescence should be detected before the advent of definite changes and it was feasible to apply ordinary psychological tests even to patients with senile dementia. By placing the patient in a better position emotionally, senile deterioration could be delayed in its onset and mitigated in its manifestations. The aged should be encouraged to take an active part in national life.

Dr. H. F. Maudsley (Melbourne, Australia) said that early diagnosis and treatment were rendered difficult by the inability of relatives to recognize early symptoms. Advice was only sought when the patient became difficult to manage at home. Mild injury commonly provoked senile changes, and injury into past history would frequently reveal some prior emotional or personality change. Dr. A. Harris (London) stressed the desirability of providing a suitable environment for the elderly.

SECTION OF NUTRITION

Friday, July 2

Importance of Proteins in Nutrition

With the president, Professor R. A. McCance, F.R.S. (Cambridge), in the chair, Dr. D. P. Cuthbertson opened the discussion with a paper which included a review of the nutritional value of proteins, followed by an account of their special significance in convalescence. At present protein usually formed 11–12% of the diet for adults and 13–14% of that for children. American troops included these proportions in their diets when allowed free choice of food in widely different parts of the world. The old dictum still held, "If you take care of the calories the protein will take care of itself." Antibody properties were concerned with specific modifications of the globulin molecule, although there was no clear connexion yet between the plane of nutrition and the antibody response. Protein loss occurred in most illnesses, and resulted also from trauma and misuse. Adequate dietary protein was therefore most important during convalescence, while debilitated patients who were to undergo operation benefited by a preparatory period on a diet rich in protein.

Dr. Harriette Chick (Cambridge) spoke on the supplementary actions between different proteins. In the past individual proteins had been assigned "biological values" according to their ability to support growth or promote a positive nitrogen balance when given singly in experimental diets. In another system "chemical scores" had been awarded, in relation to egg protein with a maximum score of 100, by deducting points according to the degree of deficiency of the particular amino-acid most lacking. Recent experience, however, had shown that when two or more proteins were consumed simultaneously the weaknesses of one might be made good by the others. The biological value of a mixture of proteins, therefore, might greatly exceed the values of any of the components. The time-honoured combination of beef-tea and white bread was found in experiments with rats to provide a good illustration of this phenomenon. Beef extract, although a good source of the amino-acid lysine, was deficient in tryptophane and tyrosine, and could not by itself support growth. Bread, being deficient in lysine, supported only slow growth. On a combination of bread with beef extract, or an equivalent amount of lysine in the form of gelatin, rapid growth was secured. Other examples of supplementary action were found between the proteins of the juice and the solid fraction of potatoes, and between those of cereals and soya-bean meal.

Dr. T. Gillman (South Africa) commented that the two preceding communications had emphasized how difficult it was to

predict the effect of various possible supplements intended to improve the nutrition of malnourished native populations. He considered that nutritional diseases might be due largely to peculiarities in metabolism imposed upon the organism by the content of the diet rather than to simple deficiencies. The fact that diseases might be cured by some nutrient could not be taken as proof, therefore, that the disease was originally caused by deficiency of that nutrient. Good growth, moreover, could not always be accepted as an index of good nutrition, since adequate growth seemed to be a prerequisite for the manifestation of many deficiency diseases.

Miss E. M. Widdowson (Cambridge) described investigations on wheat flour of various extractions as a source of protein for growing children. In a German orphanage 150 children aged 5 to 14 years, who were much below average weight on account of undernutrition, were kept for a year on diets in which 75% of the calories were supplied as bread. Some children received bread made from whole-wheat flour, for others flour of 85% or 70% extraction was used, while other groups were given bread made from the white 70% flour reinforced with B vitamins to represent 85% or 100% flour. In all groups adequate amounts of calcium and of vitamins A, D, and C were given. The remainder of the diet consisted mainly of vegetables and some jam, but small allowances of milk, meat, fish, and cheese provided a total intake of animal protein of not more than 7–8 g. daily. All the children grew rapidly and improved greatly in their general health. Miss Widdowson supported her statements by exhibiting five girls of different ages who had been subsisting on different diets. Although under the particular conditions of this experiment the degree of extraction or reinforcement of the flour had no effect on growth or health it was emphasized that this finding might not necessarily apply under other circumstances. Since the children received only small amounts of sugar and hardly any fat they were able to eat very large amounts of bread, averaging 800 g. daily, which corresponded to 65 g. of protein.

Protein Deficiency and Liver Disease

Dr. L. E. Glynn (Taplow) discussed the influence of protein deficiency on liver disease. In experimental animals deficiency of protein had been found to increase the susceptibility to many poisons, including arsenic and carbon tetrachloride. Conversely, resistance to poisoning was increased by raising the protein allowance. The protection afforded by protein supplements appeared to be due to the cystine and methionine which they contained. The fatty infiltration and massive hepatic necrosis that might occur as a result of dietary protein deficiency, even in the absence of exogenous toxins, were also attributable largely to deficiency of the same two amino-acids, which were both valuable as sources of labile methyl groups.

Agenized Flour

Sir Edward Mellanby, F.R.S., showed his interesting film on canine hysteria produced by flour treated with nitrogen trichloride. He explained that the disease was developed as an unwanted complication in his experimental dogs. Early symptoms were nervousness and difficulty in co-ordination. Later, in typical attacks, the animals rushed round with constant barking, and afterwards developed epileptiform fits and exhaustion. He had traced the cause of the disease to the inclusion in the diet of flour which had been improved by the "agene" process. When the flour was "agenized" to the extent customary in milling flour for human consumption in this country or in the U.S.A. the dogs had hysteria within a few weeks, but with very heavily agenized flour the symptoms could be made to appear after only four hours. The toxic agent had been shown to be a component of the protein fraction. No structural abnormalities had been detected in the central nervous systems of the dogs, but lesions were commonly present in the intestinal tract.

Dr. T. Moran (London) pointed out that in Mellanby's experiments the flour had contributed some 80% of the total calories in the diet. Experiments in America, however, had shown that when dogs were given agenized flour as 30% of their calories, which was about the level of intake in human dietaries, no abnormal symptoms were observed even after six to seven months.

Afternoon Programme

During the afternoon the chair was taken by Dr. F. Prescott (London). A film on lambing in relation to the feeding of the pregnant ewe was shown by the staff of the Rowett Institute (Aberdeen). Dr. Amarndo Barreiros E. Santos (Portugal) followed with an occasional paper on "Neuro-endocrine Disturbances and Disorders of Metabolic Balance after Psychic Trauma in the War."

The following demonstrations were given: R. A. McCance and E. M. Widdowson: exhibition of German children; S. R. Sengupta (Aberdeen): resistance of mice on different diets to tuberculosis; E. Lester Smith, K. H. Fantes and L. F. J. Parker: purification of anti-pernicious anaemia factor; C. C. Ungly (Newcastle-upon-Tyne): clinical trials with anti-pernicious anaemia factor; F. Blakemore and T. Moore (Cambridge): blindness in cattle resulting from vitamin A deficiency; T. Moore: combined deficiency of vitamin E and protein in rats; E. Kodicek (Cambridge) and P. D. F. Murray: the effect of partial vitamin C deficiency on muscles and joints in guinea pigs; K. M. Henry, S. K. Kon (Reading), C. H. Lea (Cambridge) and J. C. D. White (Ayr): lysine in the deterioration of the proteins of dried skim milk on storage; K. M. Henry and S. K. Kon: cystine and methionine as limiting amino-acids in milk; K. M. Henry and S. K. Kon: supplementary relationships between dairy products and other foodstuffs.

The proceedings were concluded by a visit to the Dunn Nutritional Laboratory (Director, Dr. L. J. Harris) where methods for the estimation of vitamins were demonstrated.

MEDICAL PRACTICES COMMITTEE

England and Wales

The Minister of Health has appointed the following to be members of the Medical Practices Committee for England and Wales. Their offices will be at Devonshire House, Mayfair Place, Piccadilly, London, W.1. The seven medical men are all general practitioners.

Chairman: Dr. W. E. Dornan (Sheffield). Members: Dr. J. A. Pridham (Weymouth), Dr. Annis C. Gillie (London), Dr. J. F. Murphy (London), Dr. D. T. MacDonald (Belford, Northumberland), Dr. D. B. Evans (Wrexham), Dr. P. V. Anderson (Shildon, Co. Durham), Mr. H. Lesser (Chairman of London Executive Council), Mr. R. Wilberforce (Barrister-at-Law, London).

Scotland

The Secretary of State for Scotland has appointed the Scottish Medical Practices Committee under the National Health Service (Scotland) Act, 1947. The Committee's offices are at 12, Carlton Terrace, Edinburgh, 7.

The Chairman of the Committee is Dr. A. F. Wilkie Millar, of Edinburgh, who is a former chairman of the Scottish Committee of the B.M.A. The members are: Dr. I. D. Grant (Glasgow); Dr. W. Jope (High Blantyre, Lanarkshire); Dr. J. R. Anderson (Fortrose); Sir William Marshall (Chairman, Lanarkshire Executive Council); Mr. H. A. Shewan (Advocate, Edinburgh).

Each Medical Practices Committee will consider applications by doctors to undertake general practice under the National Health Service in an Executive Council area. It will also, on request by a medical practitioner, advise whether a proposed transaction concerning a medical practice involves a consideration for goodwill.

Problems of the war-handicapped child will be studied by educators and psychologists from nine countries at a conference sponsored by Unesco to be held at Trogen, Switzerland, on July 5-11. Some 24 delegates, including directors of children's villages, will attend the meetings and will exchange views and experiences on the best methods of fitting war-handicapped children for normal life. Each delegate will present a report of his experiences, and the combined reports will form the basis of a study of war-handicapped children to be prepared by Unesco. Representatives will be present from Belgium, Denmark, France, Greece, Hungary, Italy, the Netherlands, Poland, and the United Kingdom. This will be the first Unesco-sponsored conference to which a German expert observer is invited.

Correspondence

Cervical Sympathetic Paralysis

SIR,—In their interesting historical account of cervical sympathetic paralysis Dr. J. Donaldson Craig and Mr. R. C. Fuller do not refer to the observations of Jonathan Hutchinson, who in 1875 (*Illustrations of Clinical Surgery*, Plate XXXIV, p. 203, London) noted that the small pupil associated with what was then called vasomotor paralysis was not in a state of spasmodic contraction but unable to dilate when shaded. The upper figure of the plate shows the eyes in full light, the lower one when as much shaded as possible consistently with the artist's convenience. In the former the two pupils are of equal size, in the latter the right pupil is twice the size of the other. The patient had a left cervical sympathetic paralysis together with a flaccid paralysis of the whole upper limb on that side, following a fall on head and shoulder—evidence, as Hutchinson remarks, that in these cases "the nerves give way at their roots and not in any part of their trunks." This paper, which contains many interesting observations, deserves mention in any account of the subject.—I am, etc.,

London, W.1. C. P. SYMONDS.

SIR,—In their article on this subject (June 19, p. 1182), Dr. J. D. Craig and Mr. R. C. Fuller describe the details of Horner's syndrome with meticulous care. On two minor points I should like to join issue with them. They state that what might be described as the reverse of a Horner's syndrome—viz., the stage of stimulation of one side of the cervical sympathetic system, as described by Nicati—is "rarely," if ever, seen in present clinical practice, but should be borne in mind as a possible source of confusion in diagnosis." In an investigation which I reported in *Brain* (1945, **68**, 98), I did not find that this condition was the rarity they claim. Indeed I could not collect 50 normal controls to compare with a series of pupillary inequalities investigated without discovering three who had on close inspection slight inequality of the pupils. Some of these inequalities were due to transient causes, and it was impossible to say with confidence that they were not from stimulation of one side of the sympathetic system rather than transient block of the other side. They were not due to any abnormality of the parasympathetic system, nor to permanent sympathetic paralysis, for the pupils dilated equally well with cocaine and adrenaline drops. At least one case was demonstrably due to sympathetic stimulation, as the side which was affected was known.

Secondly, although the authors describe the vascular changes in Horner's syndrome as variable, because "with the passage of time compensatory mechanisms are brought into play," they describe the pupillary changes as constant. This is not the case, unless the term "constant" is taken in a comparative sense. In one of the cases illustrated by photographs in the same paper in *Brain* it is shown that in the pupils, too, compensatory mechanisms may develop. This has been recognized before, and has been attributed by Magitot and others to an increased sensitivity of the pupil to circulating adrenaline. The affected pupil, however, does *not* enlarge when cocaine and adrenaline drops are applied, and it seems more likely that the mechanism is one of central inhibition of the parasympathetic centre. The true nature of the condition is then shown only by testing with eye drops.

These small points, like the details in the authors' article, are of importance only in so far as they reflect our understanding of the mechanisms involved in pupillary inequality. With the increasing interest in surgery of the sympathetic system, and in particular in the phenomenon of recurrence of Raynaud's disease after sympathectomy, it may be that such details are of more than academic importance.

In few sites can the balance of the two opposing forces of the autonomic nervous system be as clearly observed as in the pupils, and nature has, for good measure, thrown open the curtain of the iris to the winds of man-made collyria. Sympathectomists might well turn to the pupil to see demonstrated in two dimensions the problems they are trying to solve.—I am, etc.,

Rutherglen, Lanark. ERIC A. TURNER.

Lower-segment Caesarean Section

SIR,—I agree with Mr. Bryan C. Murless (June 26, p. 1234) in his condemnation of Willett's forceps for extracting the foetal head in lower-segment caesarean section. I have known a nasty scalp wound to be caused by this barbarous instrument, which subsequently became septic and seriously endangered the infant's life, though thanks to penicillin it recovered. Neither is extraction by the operator's hand or by the single forceps blade satisfactory, especially if the head is deep in the pelvis. Wrigley's forceps are too short and have in my opinion the great disadvantage that they have no screw which can be tightened to keep the blade applied to the head, so that it is liable to slip when traction is made.

Since first performing this operation in 1929 I have used the same method of extraction and found it invariably satisfactory. I use a Haig Ferguson forceps (though I doubt not any other forceps possessing a screw would do equally well). The right blade is applied first, on the left side of the mother's pelvis, and with the concavity downwards. The left one is then applied on the other side, the blade locked and the screw adjusted and tightened. All this is done without any hurry, and the head is slowly delivered. Of course, if the head is in the transverse diameter of the pelvis it should be rotated so that it lies antero-posteriorly, with either occiput or face presenting in the wound. The blades are then applied, as they always should be, over the ears. The essential point in this procedure is the tightening of the screw before attempting traction. The head is always easily extracted even though it lies deep in the pelvis.—I am, etc.,

London, W.1. F. J. BROWNE.

Prevention of Tuberculosis

SIR,—In the leading article (June 19, p. 1189) on the Prophit Survey carried out by the Royal College of Physicians you underline a plea made by the President that further efforts should be made to prevent those suffering from pulmonary tuberculosis from transferring their bacilli to other members of the community. According to your leader writer this problem is an epidemiological and social one and might well form the main future task of medical officers of health, who should concentrate their attention on the prevention of this disease. Surely this advice is misdirected and misleading. Medical officers of health have for long been fully aware of this problem and have made continuous efforts to cope with it. Many medical officers of health, charged in 1930 with the provision of residential treatment also, were increasing their knowledge of the whole problem in an integrated fashion. Now there is a splitting of responsibility again and it becomes the duty of Regional Hospital Boards to make arrangements for the necessary institutional treatment of tuberculosis.

Before the 1939 war London had approximately four beds for every three deaths annually from tuberculosis (about 4,000 staffed beds in sanatoria and hospitals throughout the country for approximately 3,000 deaths). During the war the available beds declined because of bombing and shortage of staff. Pre-war the accommodation was barely sufficient, but it did enable that bugbear of tuberculosis schemes—the waiting-list—to be virtually abolished. Now the waiting-list is much swollen, and with the probable further loss of beds through those beyond the Home Counties being taken into use locally, and with the merging of the always worse waiting-lists of the counties adjacent to the capital with the London list, the control of tuberculosis in the Metropolis may become more difficult than ever. In these circumstances it seems useless to urge the medical officer of health to do more to prevent the spread of the disease. How is he to proceed in the crowded home when a positive-sputum member of the household waits for months for a vacancy in a sanatorium, and when in another family, or even in the same, a sufferer with advanced disease cannot be offered segregation in hospital? Surely the main burden of preventing the spread of infection resides primarily with the hospital authority whose duty it is to provide sufficient institutional accommodation.

Regional Hospital Boards are facing one of their gravest problems here, particularly in view of the special difficulties of staffing tuberculosis sanatoria. It is not easy to see where

additional nursing staff is coming from. The best use must be made of our limited resources. Much can be achieved by the efficient organization of tuberculosis arrangements at both regional and hospital level. And it would help immediately and enormously if every large general hospital, both teaching and non-teaching, could be induced to open a male and a female tuberculosis ward. No big hospital can avoid having odd cases of phthisis passing through its wards. Better by far to nurse these in wards properly organized for the purpose and thus reduce the chances of infection of staff and possibly other patients. The training of nurses and of medical students would benefit, and the great increase in the total number of beds available for the disease would go far towards solving this grave problem.—I am, etc.,

London, N.W.11. F. J. BENTLEY.

B.C.G. Vaccination

SIR,—In their communications (June 12, pp. 1126 and 1129) in support of B.C.G. vaccination both Prof. Arvid Wallgren and Dr. H. Malmros quote the investigation by Hyge of an outbreak of tuberculosis in a girls' school, the former citing it as the investigation which perhaps best corresponds to an animal experiment and the latter claiming it as that which would seem to furnish the best evidence hitherto advanced for the efficacy of B.C.G. vaccination.

In 1942, within a month or two of the time that Hyge was vaccinating his school-children with B.C.G., my colleague, Dr. J. S. Paterson, and myself were vaccinating a number of heifers with the vole bacillus and placing them together with unvaccinated controls in a dairy herd which had a bad record under the Tuberculosis Order. From time to time animals were returned to the laboratory in pairs including one from each category, and the last four animals were not slaughtered for examination until the end of 1947, by which time Hyge had concluded and published his observations. For the first two or three years the advantage lay very markedly with the vaccinated animals. No control was free from infection after eighteen months, while two of the vaccinated animals were still completely resistant after three and a quarter and three and a half years in the herd. Over the series only 5 out of 11 vaccinated animals were infected, as contrasted with 10 out of 12 controls; but of the 5 infected vaccinated animals 4 were severely affected and in 2 of these the lesions were even more severe than the lesions found in any of the controls.

Our results bore some resemblance to those which Watson reported to the Twelfth International Veterinary Congress in 1934. Vaccinating calves with B.C.G. against the risk of natural infection, he found that when his animals reached maturity the lesions in infected animals were even more severe in the vaccinated animals than in the unvaccinated animals.

The end results of vaccination are still far from being established. The mortality rate might be reduced in one age group, only to be raised again later in life, possibly after an interval of many years. In the meanwhile the morbidity rate based on clinical observations might be deceptive, for the fully virulent tubercle bacillus might have gained access to the tissues and be lying in a state of latency. This possibility is no flight of fancy, for I have recovered the bovine bacillus from a vaccinated animal in which there was no trace of any visible lesion two years after it had been infected with a massive test dose of bovine bacilli administered by mouth. Perhaps Hyge has arranged to follow the after-history of all his school-children for the next twenty years. If he has not, I feel that he should try to do so, for the final observations in such an investigation would carry weight.—I am, etc.,

Cambridge. JAMES A. YOUNG.

SIR,—B.C.G. vaccination by Wallgren's intracutaneous method, especially when left to nurses, produces local results which are quite strong deterrents when observed by a community still not fully converted to the advantages of the vaccination. The ulceration or "pock," although in cases I have observed not larger than those to be met with in calf-lymph vaccination, remains open much longer. The average period for the "pock" to remain moist is 6–8 weeks, with some, not secondarily infected, going on as far as 4 or 5 months. Where a "pock" was open for less than 3 weeks the vaccination was likely to prove unsuccessful. (These figures are derived from about 2,000 vaccinations carried out by the Danish Red Cross on D.P.s in Schleswig-Holstein in 1947.) Further, there are 4 cases out of the 2,000 where subcutaneous inoculation has resulted in a sinus persistent after 11 months.

Under these circumstances I would like to ask whether Parish's multiple pressure[1 2] method of vaccination has been tried with B.C.G. It avoids the objection to Birkaug's apparatus in that sterilization is very simple, it is very much safer in the hands of nurses, and I think it likely that the public resistance to it would be much less than to the intracutaneous method.—I am, etc.,

Kiel, Germany. H. B. M. MURPHY, Regional Medical Officer, International Refugee Organization.

REFERENCES

1 Parish, H. J., *British Medical Journal*, 1944, **2**, 781.
2 Mole, R. H., *Lancet*, 1947, **1**, 597.

SIR,—The articles on B.C.G. vaccination (June 12, pp. 1126 and 1129) by Prof. Arvid Wallgren and Dr. H. Malmros were most stimulating and encouraging. It seems to be conclusively proved that B.C.G. vaccination is not harmful and that it may be of great benefit in anti-tuberculosis work. There are many ways in which it could be used in this country, and one of the most obvious is that of protecting contacts in those homes where, because of shortage of beds, sputum-positive cases have to be nursed for long periods. B.C.G. vaccine should now be available for use in this country.—I am, etc.,

Stanstead Abbots, Herts. B. COUTS.

SIR,—I congratulate you on continuing to publish articles on the use of B.C.G. vaccine. I think we all agree that it has now been thoroughly tried out in the Scandinavian countries, that it is harmless if used correctly, probably cuts down the incidence of pulmonary tuberculosis, and is especially useful for contacts and young nurses.

In view of the shortage of sanatoria staff and lack of facilities to take infectious cases of pulmonary tuberculosis away from uninfected contacts it is doubly important to use this method in England if there is the slightest hope that good may be done. Our tuberculosis officers in Bedfordshire, who are keen and competent young men, are anxious and willing to use the vaccine in the county. The only stumbling block is the Ministry of Health, who, presumably acting on Prof. Wilson's advice, will not supply the material, and it cannot be obtained through our commercial houses.—I am, etc.,

Luton, Beds. R. G. APTHORPE.

*** This matter is now under consideration by the Ministry of Health.—Ed., *B.M.J.*

Chances of Survival in Pulmonary Tuberculosis

SIR,—In your annotation on the above subject (June 12, p. 1143), you finish by stating that the figures for Aberdeen would have been of more value if the number of persons who were lost sight of during the period of observation had been stated. You may therefore be interested to learn that of the 1,257 patients, 26, or 2.1% of the total, were lost sight of. Details are shown in the table below.

12	were	lost	sight	of during the 1st	year of observation.
5	"	"	"	2nd	" "
2	"	"	"	3rd	" "
1	was	"	"	4th	" "
4	were	"	"	5th	" "
1	was	"	"	6th	" "
1	"	"	"	7th	" "

One of those in the fourth year died of bowel obstruction unassociated with his tuberculosis, and the one in the sixth year was killed by enemy action. Of the 26 cases, 16 had been classified as Stages 1 and 2, and of these 9 were lost sight of during the first year.

The article from which the figures were taken was, of course, a report on a paper delivered to the Tuberculosis Society of Scotland, and the number of patients lost sight of was regarded as being so small as not materially influencing the figures.—I am, etc.,

Aberdeen. ROBERT FRASER.

General Use of Tuberculin Test

SIR,—We are all in debt to the organizers and to the Prophit scholars for their skilled attack from an epidemiological angle on the disease which alone causes approximately 40% of deaths occurring in the age group 15–24. It is, however, in reference to the policy suggested in your leading article (June 19, p. 1189), a policy which might be adopted by those responsible for health supervision in young adults, that I should like to discuss certain points. How far is it practical, even with an aim so important as the early diagnosis of tuberculosis, to keep all young adults under general medical surveillance, to carry out graded tuberculin testing, and when necessary *x*-ray them? Among contacts, medical students, or nurses, where a special risk of exposure is recognized, it may be reasonable, and is in any case likely to be demanded because of their special knowledge of such matters. Among healthy young adults, whether in industry, the armed Forces, at the university, or elsewhere, the problem is different. In proportion to their intelligence they require an explanation of the reasons for carrying out the Mantoux test, and this entails giving information from which the seeds of anxiety might grow.

If 60–85% of these young adults are Mantoux-positive there are few health services equipped to carry out full-size chest *x*-ray examinations on so large a proportion. If the proportion of Mantoux-negatives were more than a small one, follow-up testing of Mantoux-negatives at four-monthly intervals would not be feasible with present facilities, and if the interval is longer the procedure loses value. Before advising the general introduction of Mantoux testing for all young adults, would it not be wiser to restrict its use to annual surveys until such time as the position in this country approaches, if it ever does, the present situation among university students in the U.S.A., where at some universities only 10–15% are positive reactors? Because this proportion is manageable, the general policy in the U.S.A. is to prefer the Mantoux test to *x*-ray examination as the routine, but these circumstances do not apply in this country. Here it would as yet be premature in my opinion to attempt to apply the Mantoux test to the general population for the purpose of controlling tuberculosis as opposed to that of carrying out a survey. There is an additional advantage in waiting. More information may become available concerning the value of the test when high dilutions are used. If the proportion of positives should remain high in this country, the best use of the test might well be as a test of sensitivity, in contrast to its current use to determine the presence or absence of living tubercle bacilli in the body.

At the present time we stand in particular need of published information concerning the proportion of Mantoux-positive young adults among groups of the population who are *not* exposed to special risk of infection. During a recent pilot investigation here on 41 undergraduates of average age 22.5 years, 35 showed a positive reaction (consisting of oedema up to 5 mm. diameter with surrounding erythema) to 0.1 ml. of 1:10,000 dilution of old tuberculin.—I am, etc.,

Oxford. R. W. PARNELL.

Xanthelasma Palpebrarum, Gallstones, and Atheroma

SIR,—Xanthelasma palpebrarum, probably a manifestation of a regional disorder of cellular lipoid (cholesterol) metabolism, is, I think, the commonest external cholesterol lesion met with, and is on the whole more frequent in females and in certain families, less frequent in those of purely British ancestry than in those of foreign or partly foreign ancestry. Its connexion with other types of xanthomatosis is of course well known, and I think that there is often noteworthy frequency of arterial atheroma and gallstones in the same families—probably indicating the presence of other associated (local and systemic) errors of cholesterol metabolism.

I knew three brothers, big men, fond of open-air exercise, especially shooting. The eldest of the three, a merchant, lived in a healthful way, largely in the country, and died at 72. Towards the end of his life there were aortic and mitral murmurs, probably atheromatous, and then suddenly he developed enormous cardiac dilatation. His younger brother, in early middle age, had a severe cardiac attack when playing cricket, and then was found to have aortic regurgitation, possibly due to rupture of an atheromatous valve. He died relatively early. The youngest of the three brothers, an architect, died at 70 or 71, apparently of coronary thrombosis. He had rather striking xanthelasma palpebrarum, and one of his daughters was operated for gallstone. A niece (sister's daughter) of these three brothers had slight xanthelasma palpebrarum at about the age of 20, but it had disappeared by 55, and she is now in excellent health at 79. The father of the three brothers died (pneumonia) at 78, and the mother lived to 94. Incidentally, this history shows that a family tendency to xanthoma and atheroma does not necessitate early death. It illustrates points to which I wish to draw attention, but is by no means an extreme example. There must be hundreds quite as striking or more so.—I am, etc.,

London, W.1. F. PARKES WEBER.

Golden Jubilee of the R.A.M.C.

SIR,—I have just read your leading article in the *B.M.J.* of June 26 (p. 1242), and your note on p. 1267 on the *Scrapbook*, which I had already read. We in Aberdeen are justly proud of the generous references in these places to Sir James McGrigor, and to Sir James Cantlie and his distinguished son, now our Director-General, commemorated in various ways and places—e.g., the McGrigor Mess at the Cambridge, and the Cantlie Club—but I cannot help thinking that it is a serious omission to have left out all reference to our Professor, Sir Alexander Ogston, whose contribution to the initiation and inauguration of the R.A.M.C. is well epitomized by one of the contributors to a privately printed book on Sir Alexander Ogston when he says: "Another of his contributions that seems to be forgotten is his 'bombshell' Address in Surgery at the Portsmouth Annual Meeting in 1899 of the British Medical Association, when he arraigned and impeached the Army Medical Department, an address which led undoubtedly to the high position taken by the R.A.M.C. in the Great War. Full credit does not appear to have been awarded to Ogston for this bold frontal attack, carried out in true Ogstonian fashion, but '*Si monumentum requiris circumspice.*'" Perhaps the B.M.A.'s recent repeated chastenings have produced a sort of inferiority complex, but it is to the credit of the B.M.A. that it was at one of its Annual Meetings that this address in surgery was delivered by Prof. Alex. Ogston, of Aberdeen, an address that was destined to have such far-reaching effects, producing R.A.M.C. results in the two great wars second to none.—I am, etc.,

Aberdeen. W. C. SOUTER.

Foetal Infection in Prolonged Labour

SIR,—I was greatly interested in the case of neonatal *B. coli* meningitis reported in the *Journal* (June 19, p. 1180) by Drs. H. R. Duval and J. T. Burrowes, since it draws attention to the foetal dangers of prolonged labour. However, I was surprised to find no reference to the work of Douglas and Stander (1943), who studied intra-partum infection of the foetus as a cause of stillbirth. By means of blood culture from the foetal heart they discovered 83 cases of bacteraemia in foetuses stillborn after prolonged labour, and in over 50% of these cases there was histological evidence of infection spreading into the placenta from the foetal surface. The most usual infecting organism was the anaerobic streptococcus. They concluded that the commonest portal of infection into the foetus was directly through the placenta, while inspiration of infected liquor into the air passages and infection through the maternal blood stream were less frequent causes. They also considered that apparently intact membranes do not constitute an impassable barrier to organisms.

Now, prolonged labour is a common event, but it is relatively rare for an infant which has been delivered alive to die from infection in the first few days of life. Consequently, if Douglas and Stander's results are confirmed, there must undoubtedly be many cases in which a newborn infant has an unsuspected bacteraemia and makes such a steady recovery that it is never diagnosed. In order to throw light on this point, foetal blood cultures were made from cord blood in five cases of prolonged

labour delivered by caesarean section in the Birmingham Maternity Hospital; positive cultures were obtained twice (anaerobic streptococci, and *B. coli*), and both infants made normal progress.

It would therefore seem possible that infection of the foetus during prolonged labour is far more common than is generally imagined, and this might well account for the increase in rate of the foetal heart so commonly observed in these circumstances. It would also appear that neonatal immunity or resistance to infection is remarkably high.—I am, etc.,

Birmingham. W. G. MILLS.

REFERENCE

Douglas, R. G., and Stander, H. J. (1943). *Amer. J. Obstet. Gynec.*, **46**, 1.

Abortion Reform

SIR,—The recent trial of two women doctors at the Old Bailey should bring home to us how an honest medical practitioner runs the risk of prosecution if he or she procures, or aids in procuring, an abortion for a woman whose life would not actually be endangered by a confinement, however dire the straits to which an unwanted pregnancy brings her. The law relating to abortion is admittedly in an unsatisfactory state.

The Lord Chief Justice, in the debate on the Criminal Justice Bill, said that if a law is bad it is his duty to administer it, but that he would do all in his power to get it altered. The Abortion Law Reform Association was founded to get the present law amended and widened, giving thereby more protection to the doctor who acts in good faith, and to lessen the terrible incidence of mortality and morbidity which results when women who have been refused help by a law-abiding doctor submit themselves to the dangers of "back-street surgery." The Association needs many more members so that its work of enlightening the community on the subject of abortion may be increased and necessary changes in the law brought about. The Secretary of the Association is: Mrs. Alice Jenkins, Abortion Law Reform Association, 53, Gloucester Terrace, London, W.2, and she will gladly supply inquirers with information and literature.—I am, etc.,

London, S.W.13. EVELYN FISHER.

Balanced-pulse Galvanism

SIR,—Credit is due to Wing Commander C. E. G. Wickham (June 12, p. 1136) for his ingenuity in the design of the balanced-pulse galvanic stimulator, but the elaboration of technique is not in itself an advantage, unless the basis on which it rests is well established. Although much attention has recently been given to the galvanic stimulation of denervated muscle, no evidence has yet been brought forward as to its clinical value, and there are experienced observers who believe that it is actually detrimental to recovery.

The history of a large prisoner-of-war camp in the East is significant. Among the prisoners was an eminent neurosurgeon, and a number of nerve sutures were performed by him. No electrical treatment whatever was given, for none was available. According to information obtained from a competent observer, the results were strikingly favourable. No doubt the good results were due to the skill of the surgeon, but the entire absence of galvanic stimulation may reasonably be regarded as a contributory factor. A comparison between groups of cases treated and not treated by galvanism would be of great value.—I am, etc.,

Sheffield. R. G. ABERCROMBIE.

Drug Addiction

SIR,—My proposal to use, for relief of pain, as far as possible morphine suppositories instead of injections has been criticized in your annotation (Dec. 13, 1947, p. 965). May I add in support of my opinion that the risk of psychic habituation seems to me lessened when the patient is not aware what is given to him, while the syringe means for him in most cases "morphine." Furthermore, using suppositories, the "needle addiction" (p. 513 of my monograph) is avoided. On the other hand, I agree that some danger will persist.

The proposal of Dr. F. R. Ellis (Jan. 24, p. 175)—viz., to treat the addict permanently with controlled doses of the habit-forming drug to which he is accustomed—already rejected by Dr. G. Laughton Scott (Feb. 21, p. 367)—has been experienced on a large scale in the so-called "narcotic clinics" some 30 years ago in the U.S.A., with extremely bad results (see p. 525 of the monograph). These "clinics" have been proved not only useless but also dangerous for the addict himself and for spreading drug addiction. A recent intention of the Mexican Government of opening such "clinics" has fortunately been abandoned, persuaded by the competent League and American authorities. If Dr. Ellis's proposal is followed, the result for the poor addict would be only a permanent change between heaven and hell, with all the very bad consequences for the patient. Furthermore, the addicts which Dr. Ellis has in mind already demonstrate through the elevated doses which they use that they do not belong to the so-called "benign" form, where an "arrested development stage" can be observed; this is quite uncommon and inherent, and cannot be "produced" artificially in addicts as Dr. Ellis seems to believe.—I am, etc.,

Buenos Aires, Argentine. P. O. WOLFF.

New Conception of Angina Pectoris

SIR,—In reply to Dr. Neil Gordon's letter (June 19, p. 1205), in which he asked how I explain the action of nitrites in relieving anginal symptoms, I should like to make the following observations.

Nicotine is known to act on the ganglion cells of the unmyelinated fibres of the autonomic system. Pharmacologists agree, however, that nitrites produce vasodilatation by direct action on the walls of the arterioles, including the coronaries. They may then cause coronary vasodilatation in cases of coronary vascular disease without affecting the activity in coronary vasodilator nerve fibres. Such a vasodilatation may result in the removal of the supposed metabolites or P factor, which are thought to be responsible for initiating the excessive reflex activity in the vasodilator pain fibres passing to the coronary vessels in cases of angina due to coronary vascular disease. That this is probably the explanation of their effect is borne out by the fact that nitrites do not relieve all cases of angina pectoris, but only *some* of those due to coronary vascular disease. For example, they had previously been tried without relief in the two cases of angina of extra-cardiac origin described in my paper. Moreover, in some cases of angina due to coronary vascular disease nitrites do not relieve symptoms, and because of this and the unpleasant side-effects some patients may decline to take them. Presumably in these cases the vessels are so severely sclerosed that they can no longer be dilated further. If nitrites act on the vasodilator fibres the degree of arteriosclerosis would have no effect in modifying the action of nitrites.

While nitrites are usually said to produce their effects by direct action on the blood vessels, there is some evidence that they may also act reflexly. They certainly cause a marked alteration in autonomic activity when administered to the intact animal. Nitrites act better and more rapidly when put under the tongue than when taken into the stomach, the normal pathway for absorption and passage to the heart. This suggests their effect on pain may be indirect. Lastly, there is the observation that nitrite inhalation causes a marked sensation of constriction in the chest, like that in angina, and in a number of cases has resulted in sudden death similar to that which occurs in cardiac anginal attacks. This makes it seem possible that nitrites may in fact induce anginal symptoms in certain circumstances.

The effects of nitrites were not considered in my paper, as they provided no evidence for or against the theory I put forward.—I am, etc.,

London, W.1. R. WYBURN-MASON.

Backache–Sciatica Syndrome

SIR,—In the report of a discussion (May 8, p. 896), Prof. Geoffrey Jefferson is quoted thus: "Ytrehus (1947) found only 33.8% of unoperated cases able to do full work, while in Boysen's survey in 1947 only 21.1% were quite free from pain." I have by me a reprint sent by Dr. Ytrehus,[1] and the figures should read: 70.8% (152 out of 213) with full ability to work,

and only 7 had been obliged to seek lighter employment; of 7 operated patients only 2 are fully capable of working. In the reference to Dr. Boysen's review[2] some significant figures have been omitted: 86.5% (225 out of 260) have complete working capacity, while 30 are fit for light work. Only 5 are unable to work. These figures agree with those of Kuhns,[3] who found that 790 out of 1,000 patients recovered completely from sciatica without operation.

If, as Prof. Jefferson emphasizes, the clinical picture of disk protrusion does not differ at all from that of the cases in which no protrusion was found at operation, it is possible that the pain is not due to the protrusion. This possibility is strengthened by the recent demonstration that complete recovery is the rule after a negative exploration of the lumbo-sacral canal.[4 5]

Most of the optimistic reports of operation on intervertebral disks are based on surveys conducted by questionary. We should welcome, therefore, the recent appearance of two reports based upon the physical examination of the patients by practitioners who had not performed the operation: (i) Aitken and Bradford[6]: results good in 50 out of 170 cases; 45% unable to return to work. (ii) Lenhard[7] (reviewing the work of the late W. E. Dandy): only 35 out of 147 are entirely well.—I am, etc.,

Melbourne. MICHAEL KELLY.

REFERENCES

1 Yrehus, O. (1947). *Acta med. scand.*, **128**, 452.
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4 Rowbotham, G. F., and Whalley, N. (1948). *Practitioner*, **160**, 212.
5 Gray, C. (1947). *Surg. Gynec. Obstet.*, **85** (Int. Abstr. Surg.), 417.
6 Aitken, A. P., and Bradford, C. H. (1947). *Amer. J. Surg.*, **73**, 365.
7 Lenhard, R. E. (1947). *J. Bone Jt Surg.*, **29**, 425.

Termination of Pregnancy

SIR,—Women desirous of having their pregnancies terminated on psychiatric grounds generally fall into one or other of the following groups: (*a*) the frankly neurotic; (*b*) those who have previously had a psychotic illness; (*c*) the pre-menopausal, often associated with (*a*) or (*b*); (*d*) the unmarried; (*e*) the married, with as many children as they can reasonably manage (inadequate housing, economic factors, etc., constitute very real problems in this group); (*f*) those who attempt to evade their normal and natural responsibilities on some frivolous pretext. The syndromes presented by each group are fairly constant for that group. Each case should be decided on its merits, and it is important to obtain as much corroborative evidence as possible before reaching a decision, which, as Dr. Chesser so aptly puts it (June 5, p. 1110), is "practically always a choice between a greater and a lesser evil."

Childbirth is the natural function of women, and any reluctance on a woman's part to carry on with a pregnancy must be viewed with concern. We should not think merely in terms of a condition reactive to an unwanted pregnancy. If we do so we may fail to identify a deep-seated disorder, which may involve the patient in a mental breakdown whether her pregnancy is terminated or not. The most difficult cases to assess are the unmarried women with stable past histories. The social and economic consequences of having an illegitimate child obviously have more violent repercussions upon them, by and large, than does the advent of an unwanted child to a married woman. The unmarried unwillingly pregnant woman frequently commits suicide, while her married contemporary rarely does so.

As previously mentioned, the acute disturbance precipitated by an unwanted pregnancy may readily obscure a serious disorder of personality. The relief afforded by a therapeutic abortion tends to produce a false sense of security in such cases. Before reaching a decision, therefore, on the desirability of terminating a pregnancy, a comprehensive psychiatric investigation is called for, preferably spread over a number of interviews. It has been difficult in the past to insist on further treatment after the surgical interference has been concluded, but with the advent of the National Health Service psychiatric treatment should be available to patients who formerly could ill afford it. Psychological treatment is as important after therapeutic abortion on psychiatric grounds as is the re-education and rehabilitation of a patient after amputation.—I am, etc.,

London, W.1. ELLIS STUNGO.

Stiff Test for Nurses

SIR,—In connexion with the current discussion on the training of nurses I should like to draw attention to certain questions in the fevers paper recently set for the Final State Examination of the General Nursing Council.

1. "Which infectious diseases may be complicated by involvement of the central nervous system; what are the special risks and how may the diagnosis be confirmed?"
2. "Describe the appearance, cultural characteristics, and properties of the diphtheria bacillus."

Apart from the scope, ambiguity, and complexity of the first question, there arises an important point of definition. In regard to the second question an adequate answer would involve a knowledge of bacteriology quite beyond that which should be required from student nurses. In fact, the Council's syllabus merely refers to the "causation" of diphtheria, and a standard textbook in popular use among nurses deals with the subject in a few lines.

Questions such as these produce a sense of frustration and not unreasonable indignation among candidates. As one responsible for the training and recruitment of nurses I suggest that the requirement of such academic standards of medical and bacteriological knowledge does not tend to produce or discover good practical nurses, nor does it help to overcome existing difficulties in regard to nursing shortage and lack of recruits to the profession.—I am, etc.,

Ilford. J. H. WEIR.

Convalescent Homes

SIR,—We see all round us the deplorable results of sectionalism, both at home and in the international field. In a small way we may combat this evil by taking care that it is not made part of medical planning. I have been struck by the opportunities presented when patients are sent away to convalesce.

Recovery is inevitably assisted by stimulating surroundings and contacts. It is therefore regrettable that in so many places convalescents are collected from one small occupational group, whereas if persons in a variety of different employments were brought together they would, from the very diversity of their interests, stimulate one another while broadening their minds. In this way some little may also be done to remove those distrusts and animosities which derive from a narrow and restricted way of life. For these reasons it appears desirable to make the most of an opportunity to secure on the same occasion a more rapid physical and mental recovery with, as one may hope, an increase in social and political sense.—I am, etc.,

Hadley Woods, Herts. G. C. PETHER.

Short Leg in Soldiers

SIR,—We read with interest Dr. Nesta H. Wells's letter (June 19, p. 1206) on scoliosis in school-children and her plea for early compensation for leg shortening by heel raising. In dealing with recruits in the Army who are sent to the Army Physical Development Centre we have found a high incidence of leg shortening with resultant scoliosis. The recruits sent here are mostly in the 17½–18½-years age group. The shortening varies from 1/4 in. to 1¼ in. (0.63 cm. to 3.17 cm.). Remarkably few give any history of backache, sciatica, or bony injury to the lower limbs, or of poliomyelitis. Even fewer are aware prior to our examination that there is any shortening.

It is our practice, however, whether symptoms are present or not, to compensate for shortening by heel raising as a prophylactic measure against back pain, except where the shortening is 1/4 in. or less. Such shortening we regard as a normal variation. In all cases where symptoms are present, and especially in youths of this age group, it is most important that other causes of low back pain, including ankylosing spondylitis, are ruled out. We therefore make it a rule in these cases to have an *x*-ray examination of the spine and sacro-iliac joints.

Shortening of between 1/2 in. and 1/4 in. we treat by raising the heel on the affected side by that amount. Heel raising of more than 1/2 in. gives rise to a somewhat cumbersome boot. Therefore, when the shortening is of more than 1/2 in., we find

it more satisfactory to raise the heel on the affected side by half the required amount and to lower the heel on the opposite side by a corresponding amount. We have found that few of these young soldiers feel any awkwardness or discomfort from boots altered in this manner; in fact most of them say that they now feel more comfortable. When the boots have been satisfactorily adapted we impress upon these youths the desirability of maintaining these alterations throughout their service and on return to civilian life.

We are deliberately omitting any statistics, as we feel that the recruits sent here are not a true cross-section of young adults, since they are specially chosen to attend a remedial course for various postural or other defects at this physical development centre.—We are, etc.,

No. 1 Physical Development Centre, Chester.

ROBERT FULLER, Capt., R.A.M.C.
DOUGLAS L. WOOLF, Lieut., R.A.M.C.
Graded Specialist in Physical Medicine.

The S.R.M.

SIR,—In the interests of accuracy may I point out that the principal point of Dr. Holman's letter under the above heading is founded on a mishearing or misconception? The proposal, duly seconded, from the body of the Great Hall and accepted by the Chairman, and approved by vote of the majority by a show of hands, was "that the meeting pass to the next business." In a short subsequent discussion, from the body of the Hall, this was agreed as intending to pass by all the motions of censure on the Council—but not those applying to censure of the Editor of the *Journal*. The first of the motions referring to the Editor was moved, spoken to by several speakers, and rejected by a huge majority. Of course I do not know what the Chairman said to Dr. Holman on the platform, but this was the actual sequence of events, my memory of which is perfectly clear.

In taking the action he did the Chairman was merely conforming to the wishes expressed by vote of the majority of the Representative Body.—I am, etc.,

Plymouth. CYRIL F. MAYNE.

Remuneration of General Practitioners

SIR,—A leading article in *The Times* of May 15 comments on the Spens report with special reference to the remuneration of dentists, but the case of the general medical practitioner demands equal consideration. Since the Minister announced his terms of service last December general attention has been concentrated upon matters of principle, and the actual payment of doctors was not an issue in either plebiscite this year. Now that the B.M.A. has recommended the profession not to refuse co-operation in the Service the amount of remuneration becomes of immediate importance.

It should surely be conceded that acceptance of service under the Act ought not to involve a loss of income for the rank and file of the profession. But careful study of the Minister's proposals shows that grave financial loss may be caused to a high proportion of doctors who have hitherto owned mixed "panel" and private practices. It is becoming increasingly obvious that, owing to the high compulsory National Insurance contributions and the heavy charge on income tax receipts to maintain the Health Service, most patients will feel unable to pay doctors' bills in addition, so the amount of private practice remaining will generally be very small, and in most mixed practices the future income from this source will be negligible. Salaried appointments, such as district medical officers for public assistance and public vaccinators, will terminate, since all patients are to be placed on doctors' lists and compulsory vaccination ceases. The vast majority of general practitioners are thus likely to be almost entirely dependent upon capitation payments for National Health Service patients, and this being so the proposed capitation fee should be much increased. It must be remembered that the Spens recommendations were based on the pre-war cost of living and that their investigations were into the income and expenses of doctors during the years 1936–7–8. Since then every essential item of a doctor's professional expenses has greatly increased—sometimes (e.g. cars) by 100%.

Two methods proposed for calculating fees are unjust. (1) The fewer the patients joining the Service the higher the capitation fee (15s. 2d. for 95%, increasing to 18s. for 80%, of the population). This should be reversed, since the fewer there are in the Service the greater the potential income from private practice, and *vice versa*. (2) A central fund is proposed equal to a capitation fee of 18s. multiplied by 95% of the population. The first charges on it would be payment for mileage, temporary residents, emergencies, etc., and "inducements" or basic salaries. What is left becomes the general capitation fee. It would be better to settle a firm capitation fee first and pay other charges from a separate fund after.

The disastrous effects of the present proposals on doctors in a typical rural area can be shown by one concrete example. In a certain district of 9 parishes there is a population of 10,000 of whom 7,500 are concentrated in two adjoining villages. With the gross capitation fee of 18s. the income payable to doctors practising here would be £9,000, but with the more likely actual fee of about 15s. it would be £7,500. There are 10 general practitioners in this district, of whom 8 have mixed panel and private practices. If practice expenses are taken as 25%, the net income these doctors may expect would be £5,625 for a 15s. capitation fee rising to £6,750 for one of 18s. Even if one were justified in assuming that only 8 of these men were fully occupied, none of them could hope to earn as much as £1,000 per annum. In none of these practices does the income received from present panel capitation fees amount to a quarter of the gross receipts, so the losses may thus amount to 50% of their present income. (The lower figure cannot allow for mileage payments, but the 18s. proposed by the Minister probably more than covers what may at present be expected.) This very disturbing example of the general practitioner's prospects could doubtless be multiplied throughout the country.

The changes by voting shown in the last plebiscite were undoubtedly prompted by economic pressure; but of those general practitioners voting 67% still disapprove of the Act and 53% were against accepting service. It is obvious that most of the profession will enter the Service with grave misgiving and the prospect of a serious drop in income and standard of living. The Service must inevitably cause harder work for doctors. It offers no payment for locums—the doctor must "provide a deputy"—and no lessening of hours during which a man is liable for duty. When in every other walk of life higher wages are being paid for shorter hours, is it fair that doctors should receive so much less for more work, and under conditions of service which are still distasteful to so many?—I am, etc.,

RALPH GREEN.

Medical Education and the G.P.

SIR,—Two committees have now recorded their recommendations for the reform of medical education. The latest report states that "the undergraduate curriculum . . . can do no more than lay the foundation of a doctor's education: but it should stimulate him to remain a student all his life" (*Journal*, May 29, p. 1038). How, in the face of all the clerical work he must perform, can a G.P. remain a student? I have heard of practices where the dispenser divides the waiting-room patients into (*a*) those wanting certificates, (*b*) those asking for medicine, and (*c*) those demanding letters to visit the hospital "to be examined." How is this to be prevented when there is so great a temptation to allow it to spread under the N.H.S.? The committee on postgraduate education which is to be set up may be able to tell us.

I would like to make the following suggestions:

(1) We attempt to divide the work so that the numbers of N.H.S. patients are between 1,500 and 3,000 per doctor.

(2) We try to maintain the clinical enthusiasm instilled into us by our specialist teachers. What G.P. can deny that feeling of satisfaction at detecting, for example, a patch of bronchial breathing in a feverish patient with pain in the chest?

(3) We give ourselves time to examine our patients and make at least a tentative diagnosis for all patients referred to a specialist. Surely this, if only from the mistakes we make, is how we shall learn. We may also help to cut down unnecessary investigations, the rising flood of which Dr. Ffrangcon Roberts justly deplores (March 13, p. 485). I like the story (told by one of my recent chiefs) of the Regular Army specialist replying to a brief, "Please examine and advise," with, "You examine and I will advise."

(4) All G.P.s should be able to organize the following investigations for their N.H.S. patients without reference to a specialist :

(*a*) Chest *x*-ray examination and inspection of the film, with radiologist's report (*not* barium meal). (*b*) Blood count and E.S.R. (*not* blood chemistry).

This would cut down the number of patients referred to specialists, who could then give their opinion and not merely the results of investigations. Unless G.P.s help in this way hospital out-patient appointments will become for three months ahead instead of three weeks—by which time many of our patients will be beyond help. And how much more interesting and satisfying our work would be by seeing more cases through to recovery—cases which could not have quite the same interest to an overworked specialist.—I am, etc.,

Mansfield, Notts. MALCOLM TATE.

Working in the N.H.S.

SIR,—I should like to congratulate Dr. N. Graham for his excellent suggestion (June 26, p. 1260), which if put into practice would make every general practitioner indebted to him. I would go further in my method of reform by suggesting an emergency system which I advocated in your columns some years ago. This was based on the nearest hospital and modelled on the style of the American and some Continental systems whereby cases occurring outside surgery hours are dealt with by a small staff of doctors, nurses, and ambulance men.

A practitioner, on receiving a call out of hours, could either attend to it himself or call on the emergency system. The idea of a rota has never commended itself to me for the following reasons. (1) Unless there are arrangements for delegating the morning surgery to a colleague one can hardly be expected to face the 9–10 a.m. session (after being out of bed two or three times during the night) with the vigour and enthusiasm considered to be necessary for this task. (2) Whereas one knows the timid and "windy" patients of one's own practice and can placate them with advice, this cannot apply to the patients of another doctor, whom one does not know.

There is one point about morning surgeries, and that is it may prove an obstacle to some workers who cannot obtain permission to take time off from their work for various reasons. This can be overcome by holding alternate morning and evening surgeries.—I am, etc.,

Hull. L. I. HARDY.

SIR,—Dr. N. Graham's letter (June 26, p. 1260) raises many important questions which might be debated at length. I should like to be allowed to deal with one.

The clause, "thus the patients attending the morning clinic would for the most part *really need medical attention*" (the italics are mine), in its context appears to me to imply that only people who are already really ill should consult their doctor. I cannot too strongly condemn the attitude which would support such an opinion. After practising medicine for twenty years I am becoming increasingly convinced that one of the main functions of the general practitioner should be that of educating patients, whom he knows more or less intimately, for real health of body and mind ; and I welcome every patient who comes to me for advice on the conduct of his life—physical and mental—when he is *not* "really ill." Such patients should not, in the interests of their own and the nation's economy, have to forfeit a morning's work. The practitioner who has little time or patience for the patient who is not really in need of medical treatment is missing some most interesting work and the opportunity for fulfilling what I believe should be his most important function, which is educating his patients in the art of healthy living.—I am, etc.,

Panteg, Mon. A. DALBY.

Royal Medical Benevolent Fund

SIR,—"Westmoreland Lodge" is a residence for some of our beneficiaries, but it is a logical conclusion that the fund must establish a sick bay or hostel where care and special attention can be given to the residents during illness and in their declining years. In fact this is a most urgent and pressing problem.

There appeared in your issue of June 26 the statement that the Medical Insurance Agency had entrusted to the Royal Medical Benevolent Fund £1,000. I would like to amplify this statement. The cheque we actually received from the Medical Insurance Agency was for £1,200. The Agency gave full discretionary powers to the committee, although expressing the desire that £1,000 be allocated to form the nucleus of a fund to establish proper provision for the sick and infirm.

I have to report that my committee, realizing that the need is so very urgent, has allocated the whole of the gift—viz., £1,200—together with the income tax which will be recoverable under this covenant payment, to form the nucleus of a special fund. With this magnificent opening I am encouraged to make an appeal to the profession to enable us to complete the project. Whole-hearted approval has been shown of our determined efforts to give residential accommodation, which we have been able to do through the magnificent bequest of the late Dr. Arthur Holdsworth Davis. We now ask the profession for the necessary financial support to establish a hostel for the sick and infirm.

Contributions are very earnestly invited, and should be marked "Westmoreland Lodge Sick Bay," and forwarded to 1, Balliol House, Manor Fields, Putney, London, S.W.15.—I am, etc.,

C. LUTHER BATTESON,
Honorary Treasurer.

POINTS FROM LETTERS

5½-Day Week

Mr. EVERARD WILLIAMS (London, W.1) writes: The Spens Report on conditions of service for specialists just published has been stated to have been accepted "in principle" by Mr. Bevan. The Socialists have always fought for a five-day working week for the workers in industry. Why a five-and-a-half-day week for surgeons and physicians ?

Remuneration

Dr. J. E. KENNEDY (Glasgow) writes: Resentment is naturally the feeling roused by the "let down," but the Association is not to blame this time. The profession almost deserves what it is about to experience. It has not organized in the past, but has endured slavery philosophically. One wonders if the Ministry appreciates the real position—viz., that standards of work must fall. Apparently the dentists are privileged.

Books for Refugee Doctors

Dr. R. L. COIGNY writes: Among the 600,000 displaced persons in Germany, Austria, the Middle East, and Italy there are approximately 2,500 doctors, dentists, pharmacists, etc., who are actively engaged in medical practice in caring for their fellow refugees. Their work involves all aspects of preventive and curative medicine. One of the most serious problems of this group is the difficulty of obtaining up-to-date information of the progress in medicine, dentistry, etc., during the past ten years, and I should like to appeal through your pages for donations of textbooks and journals to be distributed to the refugee doctors and dentists. Donations should be addressed to: Preparatory Commission for the International Refugee Organization, 19, Hill Street, London, W.1.

Doctors and Clerks

Dr. P. A. T. PHIBBS (Pinner, Middlesex) writes: Not only have the doctors been made responsible for the correct writing of the forms EC.1 by the public, which entails considerable trouble and often extra postage for work that should surely be the responsibility of the clerks who are paid to organize the N.H.S., but also they are expected to pay for the postage of these weighty forms to the Local Executive Council. . . . This is the very thin end of the large wedge of chiselling and bullying that will be driven harder and harder into the profession, and it is something for which the B.M.A. must ever be on the alert and against which it must fight even before it appears. . . .

Certificates and Prescriptions

Dr. C. J. B. Fox (Stanley, Co. Durham) writes: (1) When a patient who elects to remain a private patient requires a certificate for sickness benefit, do we use the official certificate to be issued to us or will our own private certificates suffice ? (2) When a private patient requires medicine, is it permitted for us to issue an official prescription and thus enable him or her to get the medicine free ?

***(1) Private certificates will be accepted by the Ministry of National Insurance. (2) Private patients will not be entitled to obtain medicine free of charge in the N.H.S.—ED., *B.M.J.*

Medico-Legal

COMPENSATION BARRED BY UNSKILFUL TREATMENT

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

If a workman is injured at work and unskilfully treated, it appears that his disability may be held to result from the treatment and not the accident, so that he may be refused compensation. As Lord Justice du Parcq said in 1944, negligent or inefficient treatment by a doctor or other person may amount to a new cause, a *novus actus interveniens*, shifting the liability from the employer. The courts are always anxious to interpret the Acts beneficially to the worker, and the Court of Appeal in a recent case[1] strongly criticized this doctrine and hoped the House of Lords would deal with the matter, but were unable to upset it as it has been supported by several earlier decisions of the court, which by custom and law are binding.

The workman in this case had an unusual deformity—a small supernumerary thumb. This was injured by a flying stone. After conservative treatment he was put on light work, but the pain remained and the doctor at the emergency hospital advised the removal of the supernumerary and also of the upper part of the normal thumb beside which it lay. This was done, but the stump, in consequence of the operation, remained sore and disabled the man. The county court judge held that the disability was due to the "ill-advised" operation. The Master of the Rolls, Lord Greene, recalled that the doctrine of a new intervening cause in such cases came from early in the history of workmen's compensation, when courts were more concerned to protect the employer, or at any rate less tender to the workman. He thought the correct view should be that an incapacity caused immediately by unskilful treatment might in truth be due to the accident and attributed to it, provided that recourse to the treatment was the natural and reasonable consequence of the accident. Nevertheless the court was bound to follow the law as it stood, and the judge's decision, which was supported by evidence, could not be interfered with.

Worth noting is his remark that he would have thought that one of the earlier cases, in which the workman went to a bonesetter, would have been decided on the simple ground that to go to a bonesetter instead of to a proper medical man was in itself unreasonable.

[1] *Hogan* v. *Bentinck West Hartley Collieries*, 1948, 1 All E.R., 129.

Medical Notes in Parliament

NATIONAL HEALTH SERVICE

Public and Private Practice

Miss ALICE BACON inquired on June 24 under what authority a doctor refused to take a person on his list and intimated that he was prepared to take the same person as a paying patient.

Mr. BEVAN said such conduct was quite unethical. He confidently expected that the profession would express the strongest disapproval of it.

Miss BACON said this conduct occurred, and gave point to the contentions advanced by some Labour Members during the Second Reading of the National Health Bill that to allow a doctor in a public practice also to undertake private practice was a means whereby public confidence in the whole scheme could be destroyed.

Mr. BEVAN hoped that as experience was gained this practice would disappear. It was believed in only by a very small proportion of the medical profession. It ought to receive the disapproval of the House and the country.

Mr. WILSON HARRIS asked whether there was a specific remedy when a doctor refused to take a patient on the ground that the patient was in a position to pay and therefore was not accepted on the general list.

Mr. BEVAN said such patients could go to another doctor. If at the end of the process they were without a doctor they could be assigned to one. There had been one or two cases where a doctor had taken a husband and wife and had refused to take the children. He believed that this also was frowned on by the medical profession.

Dr. SEGAL asked Mr. Bevan to enlist the active co-operation of patients in reporting such instances.

Mr. BEVAN replied that the patients were obviously making their complaints known, or else the House would not have heard about them.

Supply of Drugs

Mr. RANDALL asked the Minister of Health how many instances of doctors informing their patients that there was a restriction on drugs which could be ordered for free supply for the proper treatment of patients under the new Health Service had been brought to his attention; what steps he had taken in the matter; and what action was open to patients so informed by their doctors. A similar question was put by Mrs. LEAH MANNING.

Mr. BEVAN said he trusted there had not been many such cases. He was confident that doctors would not attempt to discriminate between those who used the Service and those who did not. He welcomed this opportunity to make it clear that patients were entitled under the new Health Service without restriction to every kind of drug and appliance necessary for their treatment. Any doctor who failed to prescribe these drugs would be breaking his terms of service. He hoped this statement would receive the widest possible publicity. When a doctor made the statement which Mr. Randall had cited the course open to the patient was to make a complaint to the local Executive Council. That council would investigate the complaint. There was machinery under the Act to deal with the matter. All he himself could do was to call attention to the facts and ask the public to note what was said in Parliament and not to listen to what certain doctors, who had acted well below the ethical standards of the profession, had said.

Col. STODDART-SCOTT asked for an assurance that doctors would not be surcharged for supplying certain drugs, as they now were under the panel system.

Mr. BEVAN said there were regulations which concerned themselves with the nature of the drugs to be prescribed. Certain things were prescribed as drugs which were not drugs—champagne, for example.

B.M.A. Co-operation

Dr. HADEN GUEST asked whether Mr. Bevan knew that the British Medical Association took the strongest view of the improper conduct which a few doctors had followed and was taking action to bring this to the attention of the whole profession. He asked further whether Mr. Bevan did not agree that, since the B.M.A. was co-operating to give the best possible service under the slogan of Dr. Dain that "Only the best is good enough," it was desirable that its help in this matter should be welcomed by the Minister.

Mr. BEVAN replied that he had already welcomed the help given by Dr. Dain, especially in a letter written recently to *The Times* (June 18). Mr. Bevan was happy that the vast majority of the medical profession frowned on the practices which had been brought into question.

Maternity Services

Mr. HASTINGS asked Mr. Bevan why he had decided to reverse the policy of Statutory Instrument 506 as regards the method of obtaining maternity medical services by encouraging doctors who had no midwifery experience to undertake maternity work and arranging to pay them for it.

Mr. BEVAN said he had decided after consultation with the medical profession to provide a lower fee for maternity medical services undertaken for his own patients by a doctor with ordinary experience. Such a doctor could not otherwise receive any fee for such services, either from public funds or from the patient. This did not affect the higher fees for special experience or the main objective that maternity work should generally be done by practitioners with such special experience. A general practitioner could do obstetrical work now and did do it, so no new scandal was being created. A new system was being introduced which would mitigate the present evils. He hoped before long the system would entirely remove them. The scheme was to create a panel of general practitioners who would do obstetrical work and relieve other general practitioners without the same experience from doing it. This would powerfully modify and improve the existing practice. A doctor would be paid for obstetrical work if he did the work for his own patient at that patient's request.

Temporary Residents at Holiday Resorts

Sir ERNEST GRAHAM-LITTLE asked on June 25 whether the Minister of Health would make arrangements to meet the difficulty of medical practitioners at holiday centres, where the population was increased at certain times of the year but the practitioner's capitation fee was to be based on patients

from the permanent population, with a consequent loss to the practitioner during the holiday months.

Mr. BEVAN answered that the arrangements for paying doctors for attendance on temporary residents, which would be simplified under the new scheme, would meet this difficulty.

Transfer of Officers and Compensation

On the motion of Mr. JOHN EDWARDS, the House of Commons on June 23 approved without debate the draft National Health Service (Superannuation) (Amendment) Regulations, 1948. Mr. Edwards then moved that the House approve the draft National Health Service (Transfer of Officers and Compensation) Regulations, 1948.

Mr. BURDEN said he was disappointed that the Minister took power to depart from the accepted code of compensation applicable to the Local Government Service. This code, which resulted from negotiations between the National Association of Local Government Officers and the Ministry of Health, was being definitely worsened. The Minister was breaking a pledge given by the Minister of National Insurance when the National Insurance Bill was under discussion. That Minister then said that when the State transferred functions it accepted liability for absorption or compensation of staff.

The DEPUTY SPEAKER suggested that the corresponding regulations relating to Scotland should be discussed at the same time. This was agreed.

Commander GALBRAITH said the regulations laid down that a claimant must have served eight years to be eligible for consideration. Why was that period chosen?

Mr. CARMICHAEL said the Glasgow Authority had decided to have a full-time medical service under the Poor Law. The entire duties of the medical people in that service were confined to the aged and sick who were on the Poor Law. A number of them had been advised by the Glasgow Authority that there was no employment for them under the Regional Hospital Scheme and none under the Scottish Office. Some of them had at least ten years' service, and for them to enter ordinary medical practice was not an easy task. Should these medical officers or other local authority officers make an effort to be self-employed and soon discover that they were incapable of so continuing, what would be their position in regard to compensation?

Mr. EDWARDS said the new code was the result of careful consideration in the light of present circumstances. This code would apply to all transfers which followed upon current legislation. The Ministry would do everything it could to ensure that claims did not arise, but he stressed the point that there was a great shortage of manpower in this field. The Minister would be no less humane than local authorities had been in the past, and the door of the Ministry would always be open to the Association of Municipal Employees. The eight-year period was in the nature of a compromise. The provision of two-thirds of the old salary as the maximum compensation was taken from the old Local Government Code. How close one went to the maximum would depend on the length of service. In the matter of comparable employment, the Government would do its best so to arrange transfers and to offer employment that there should be the minimum of inconvenience and trouble to the person concerned. The Government had felt it ought to increase the amount of extra compensation because of years of age and had so provided for those over 45—because what seemed important was the age of a person rather than the actual years spent in the service. In regard to the provision that no compensation was payable for a diminution of emoluments less than 5%, even on large salaries these amounts were negligible when allowance was made for income tax.

Mr. RANKIN asked whether in the case of an officer transferred to another district the Department would pay him for his accommodation while in his new position? Mr. EDWARDS said that matter ought to be discussed between the Associations and the Department in considering conditions of service.

The Draft Regulations for England and Scotland which had been under discussion were then approved.

Superannuation Regulations

Mr. EDWARDS then moved that the draft National Health Service (Superannuation) (England and Scotland) Regulations, 1948, be approved.

Col. GOMME-DUNCAN asked whether the provision for cross-posting from England to Scotland and from Scotland to England portended that a large-scale transfer was likely to be made under the new Health Service. Mr. FRASER did not expect that there would be any large-scale transfer, but said that as usual there would be more transfers from Scotland than to Scotland.

The House then agreed to the regulations. Approval was also given to the draft National Health Service (Scotland) (Superannuation) (Amendment) Regulations, 1948, and to the draft National Health Service (Transfer of Officers and Compensation) (Scotland) Regulations, 1948.

VENEREAL DISEASE

Lord BALFOUR OF BURLEIGH, in the House of Lords on June 29, asked the nature of the difficulty in administering the V.D. Acts and Regulations which led to the withdrawal of the statutory protection of secrecy from persons receiving treatment at V.D. clinics, and whether it was contemplated that in future information as to attendance or non-attendance at V.D. clinics, or factual information as to the state of health of persons receiving treatment, would in any circumstances be able to be communicated to the police by the medical officer of health or by a member of the V.D. services. He asked the number of cases in which compulsory medical examination took place under Regulation 33B now repealed, and the number of cases (men and women separately) in which the persons examined were found to be suffering from venereal disease.

Lord LISTOWEL said the withdrawal of the provision resulted from the revoking of the Public Health (Venereal Diseases) Regulations of 1916. These regulations placed upon local authorities the responsibility for the treatment of venereal diseases and had been revoked because that responsibility now devolved upon Regional Hospital Boards under the National Health Service Act. It no longer appeared necessary to continue special statutory provision to the effect that treatment for venereal diseases should be regarded as confidential. The maintenance of secrecy did not primarily depend for its force on any statutory provision but rather on the proper and normal relationship between doctor and patient. There was no reason whatever to apprehend that the confidential nature of venereal disease treatment would not continue to be as closely preserved as it always had been. The number of cases in which compulsory medical examination took place under Regulation 33B was 13 men and 1,116 women. Information about how many of these were found to have venereal disease was not available.

R.A.F. Conference

On June 28 Sir ERNEST GRAHAM-LITTLE asked the Secretary of State for Air whether he knew that at a conference of A.O.C.s held in November, 1947, at an R.A.F. unit in Germany attended by all doctors, padres, and commanding officers of the wing, M.O.s were reminded that a long-standing regulation required them to divulge to the commanding officer the names and full medical details of patients under their professional care suffering from venereal disease, these records being accessible to other persons than the C.O.; that, as these requirements constituted a breach of the obligation binding members of the medical profession not to divulge to third persons information received in their professional capacity, several medical officers present at the conference expressed reluctance to obey the regulation; and if he would consider its withdrawal.

Mr. ARTHUR HENDERSON replied that the officers who attended this conference were reminded of a King's Regulation which required a daily sick return, showing the diagnosis and disposal of each case, to be made to the commanding officer. At the conference some misgivings were expressed about the regulation, which was, however, necessary to enable a commanding officer to carry out his duties in regard to the health and welfare of his unit. The situation in the R.A.F. was not analogous with that in civil life. A commanding officer was responsible for the health of his men and for reducing the risk of infection. He must therefore be made aware of cases of venereal disease in his unit. Mr. Henderson said that in these circumstances he could not agree with Sir Ernest that this regulation should be withdrawn.

Limbless Ex-Servicemen.—Replying to Col. LIPTON on June 21 Mr. BLENKINSOP said that ex-Service paraplegic cases were a small group. Some 600 men and women from the last war suffered from this spinal disease and 200 were still in hospital. Of the remaining 400 patients 70% were in full and regular employment. The bulk of the treatment work for paraplegics was done at the well-equipped hospital at Stoke Mandeville and two auxiliary centres at Eastbourne, and at the Star and Garter Home. He hoped that by the end of the year a new hostel at Osterley Park would be available for paraplegic cases who were training for practical jobs.

Barley Sugar.—Dr. SUMMERSKILL stated that there are ample supplies of glucose barley sugar available to meet all demands against medical prescriptions, although it may not always be possible to meet the demand for the product of a particular manufacturer.

Nutrition of School-children.—Mr. TOMLINSON circulated on July 1 this summary of the assessment of nutrition of school-children seen at routine medical inspections in England and Wales in 1939 and 1946.

Year	Number Examined	Percentages			
		A (Excellent nutrition)	B (Normal nutrition)	C (Slightly sub-normal nutrition)	D (Bad nutrition)
1939 (only first two terms)	1,098,367	14·7	73·8	11·0	0·5
1946	1,563,015	16·8	75·1	7·9	0·2

NOTE: (1) The figures for 1939 relate to Elementary School children and those for 1946 to children attending maintained Primary and Secondary Schools.
(2) Further information on the nutrition of school children is to be found in Chapter I of the Report of the Chief Medical Officer of the Ministry of Education for the Years 1939–45.

Salaries of Deputy M.O.H.s.—On June 29 Sir ERNEST GRAHAM-LITTLE asked the Minister of Health whether Deputy County and Deputy County Borough Medical Officers of Health commonly received a salary of between £800 and £900 per annum, whereas specialists under the Spens Committee Report are to receive a commencing salary of £1,500 linked to age 32 years. Sir Ernest asked him to grant the above officers classification and remuneration as specialists when their status and qualifications were equivalent to those of officers recognized as specialists in other branches of the National Health Service.

Mr. BEVAN replied that it was not for him arbitrarily to determine these officers' salaries, but rather to encourage appropriate negotiating machinery for dealing with any proposals for revision.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* infectious diseases were less prevalent during the week, and the decreases included measles 1,601, whooping-cough 212, and scarlet fever 20.

Alternate rises and falls have been a feature of the returns of measles during the past three months. During the week the largest decreases in the notifications of measles were: London 328, Essex 311, Warwickshire 283, Durham 208, Middlesex 192, and Kent 102. The counties with an increased incidence of measles included Derbyshire 69, Northumberland 51, Devonshire 42, Lincolnshire 42, and Monmouthshire 42.

Only a few counties recorded large fluctuations in the trends of whooping-cough. The largest decreases were: Middlesex 76, Nottinghamshire 53, Gloucestershire 52, and Essex 48, while in the combined area of London and the south-eastern counties a rise of 72 was recorded. No changes of any size were reported in the local returns of diphtheria. Only small variations occurred in the local incidence of scarlet fever. In the south-eastern, south-western, and northern counties there was a tendency for a small increase, and in the remainder of the country the incidence either decreased slightly or remained constant.

The largest returns of dysentery were: Yorkshire West Riding 24 (Bradford C.B. 10, Aireborough U.D. 11), London 16, and Lancashire 10. Lancashire with 5 notifications of acute poliomyelitis was the only county with more than one notification of this disease.

In *Scotland* increases occurred in the notifications of scarlet fever 81, acute primary pneumonia 11, and diphtheria 9. Decreases were reported for measles 63 and cerebrospinal fever 10. The rise in the incidence of scarlet fever was due to an outbreak in the county of Lanarkshire, where 101 cases were notified during the week. The notifications of diphtheria in Glasgow were 11 more than in the preceding week.

In *Eire* infectious diseases were slightly more prevalent, and the rises included measles 26 and whooping-cough 25. The largest of the local outbreaks during the week were: 24 cases of whooping-cough in Kilkenny, Kilkenny R.D., and 17 cases of measles in Galway, Loughrea R.D.

In *Northern Ireland* only small changes were reported in the trends of infectious diseases.

Week Ending June 26

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,649, whooping-cough 2,803, diphtheria 137, measles 10,571, acute pneumonia 373, cerebrospinal fever 34, acute poliomyelitis 27, dysentery 64, paratyphoid 8, and typhoid 3.

No. 25

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended June 19.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.
Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.
A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1948					1947 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	45	8	14	6	1	39	4	18	—	1
Deaths		—	1				1	1		
Diphtheria	158	15	56	11	3	220	24	41	24	8
Deaths	1	—	—	—	—	2	1	3	—	—
Dysentery	91	16	41	2	—	47	5	19	—	1
Deaths				—	—				—	—
Encephalitis lethargica, acute	—	—	1	—	—	2	—	1	—	—
Deaths		2					1			
Erysipelas			34	8	6			25	14	2
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				23					39	
Deaths	45	4	3	1	3	78	1	17	6	2
Measles*	10,624	755	188	151	67	10,632	637	117	149	26
Deaths†			1	1	—	7	1	—	2	—
Ophthalmia neonatorum	53	4	21	—	1	64	1	14	—	2
Deaths										
Paratyphoid fever	8	—	—	1(B)	—	11	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	456	19	1	3	1	328	26	1	1	2
Deaths (from influenza)‡	3	—	—	2	—	1	—	1	—	—
Pneumonia, primary			161	30				189	17	
Deaths	156	23		6	9		18		6	4
Polio-encephalitis, acute	—	—				2	1			
Deaths							—			
Poliomyelitis, acute	15	—	3	3	—	44	2	2	2	1
Deaths§	—	—					—			
Puerperal fever		—	8		—		2	14		—
Deaths										
Puerperal pyrexia‖	96	10	8	—	2	121	8	4	—	—
Deaths		—					1			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,542	107	374	62	41	870	82	120	25	35
Deaths†			—	—	—	1	1	—	—	—
Smallpox	—	—	—	—	—	7	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	7	—	—	1	—	7	—	1	5	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	3,086	273	40	105	17	2,107	276	87	54	15
Deaths	6	—	—	1	1	13	3	2	—	1
Deaths (0–1 year)	295	32	35	14	14	420	38	73	25	15
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,178	635	536	186	109	4,089	626	583	192	111
Annual death rate (per 1,000 persons living)			10·8	11·6				12·1	12·1	
Live births	8,565	1412	1074	434	264	9,630	1499	1225	498	304
Annual rate per 1,000 persons living			21·7	27·1				24·7	31·4	
Stillbirths	211	16	32			258	25	32		
Rate per 1,000 total births (including stillborn)			29					25		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.
† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.
‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.
§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.
‖ Includes puerperal fever for England and Wales and Eire.

Medical News

Viscount Addison

The Rt. Hon. Viscount Addison, K.G., P.C., M.D., F.R.C.S., has been appointed Paymaster-General in succession to Mr. H. A. Marquand, M.P., who becomes Minister of Pensions in place of the Rt. Hon. George Buchanan, M.P., appointed Chairman of the National Assistance Board. Viscount Addison will hold the office of Paymaster-General with that of Lord Privy Seal.

Entered Health Service

The Ministry of Health and the Department of Health for Scotland have announced that the number of doctors in Great Britain who had enrolled under the National Health Service was 18,514 up to Saturday, June 26. This figure was made up of 1,976 doctors in Scotland (compared with 1,810 a week earlier) and 16,538 doctors in England and Wales (compared with 14,784 a week earlier). By the same date 8,131,166 applications had been received for entry on the lists of doctors taking part in the Service. The total for Scotland was 731,166, and that for England and Wales was 7,400,000. These totals do not include the 22,000,000 persons at present on the lists of insurance doctors.

New President and Honorary Fellows of R.S.M.

At the Annual Meeting of Fellows of the Royal Society of Medicine on July 6, with the President in the Chair, the following were elected Honorary Fellows: Field-Marshal Smuts; Sir Archibald Gray; Prof. Charles Singer; Sir Henry Tidy; Prof. Georges Debaisieux, of Louvain; Dr. Mathew Makkas, of Athens. Sir Henry Dale, O.M., has been elected President of the Royal Society of Medicine for the coming year.

Society for Relief of Widows and Orphans of Medical Men

The annual general meeting of the Society for Relief of Widows and Orphans of Medical Men was held at 11, Chandos Street, London, W., on June 2, with the president, Sir Robert A. Young, in the chair. The annual report and accounts for 1947 were received and approved and new officers for 1948–9 were elected. Income exceeded expenditure by £688. The membership of the society at the end of 1947 was 261. During the year seven widows died; one of these had received £3,793 in grants to herself and to her children. The total sum distributed in grants during the year was £4,502 10s. Widows over 65 years of age received £75, and those under 65 received £60, and at Christmas presents of £20 were made to each widow. The president referred with regret to the death, on May 13, of Dr. E. J. Blackett. At the 1947 annual general meeting Dr. Blackett resigned from the office of secretary of the society, after having held the post for 42 years. Details of the society may be obtained from the secretary at 11, Chandos Street, London, W.1.

Called to the Bar

M. Markowe, M.D., D.P.H. (Lincoln's Inn), M. G. L. Lucas, M.B., Ch.B. (Middle Temple), and F. I. McD. Paterson, M.B., B.S., were called to the Bar on June 9.

Scientific Information Conference

Speaking at the opening session of the Royal Society Scientific Information Conference called to examine the possibility of improving existing methods of collecting, indexing, and distributing scientific literature, Sir Edward Appleton, F.R.S., said that science had been well served in the past by the publications of its learned societies and academies and by the scientific journals. But the spate of scientific publications was now such that it was becoming extremely difficult to keep abreast with events on even the most limited sector of the scientific frontier. Something must be done to relieve the situation. The really important objectives to be achieved were threefold: first, to ensure that the scientist got all he needed; secondly, that he got it quickly; and, thirdly, that he got it in the right form and shape. Any solution must be practicable; it must be reasonable in cost, and it must take into account the acute shortage of scientific manpower hampering the development of almost every scientific organization in the world—and certainly every organization in the British Commonwealth. The Conference must keep constantly in mind the needs of the scientific user. "Personally what I require, as a working scientist, are reprints or separates of the papers that matter to me, and I want them quickly and in a form easily storable. In choosing the reprints of the papers I require I want the guidance of brief abstracts to inform me of the existence and contents of those papers." Then there was the question of translations. Here was certainly a field where co-operation would lead to economy of effort.

Croydon Welsh Society

Mr. R. Glyn Thomas, F.R.C.S.Ed., has been elected the first president of the newly formed Croydon Welsh Society.

New Chairs of Pathology

The University of London has established two Chairs in the Department of Pathology at King's College Hospital Medical School. They are the Chair of Morbid Anatomy, to which Dr. H. A. Magnus has been appointed, and the Chair of Chemical Pathology, to which Dr. C. H. Gray has been appointed.

William Hyde Award

The Research Board for the Correlation of Medical Science and Physical Education (Apothecaries' Hall, Black Friars Lane, Queen Victoria Street, London, E.C.4) announces that the William Hyde Award for 1947 has been made to Dr. L. G. C. Pugh in recognition of his work on rheumatism. The Award is named after Alderman William Hyde, who died in April, 1945. He was a trustee of the Nuffield Provincial Hospitals Trust and spent a great part of his life in helping the advancement of the health and hospital services of the country. Starting as secretary of a rural friendly society, he soon became interested in the wider problems of public health. He was an able chairman of the public health and public assistance committees of the Oxfordshire County Council and in 1935 was chairman of the Ministry of Health's Consultative Council on National Health Insurance. It was to a large extent Alderman Hyde's concern for the future of the hospital services of the country which led to the establishment of the Nuffield Provincial Hospitals Trust.

Research Committee of Tuberculosis Association

In 1947 the Tuberculosis Association decided to set up a committee to help co-ordinate research into problems connected with tuberculosis in England, Wales, and Northern Ireland. The body now in being consists of members who are authorities in their special fields, and it is under the chairmanship of Dr. F. R. G. Heaf, President of the Association. It includes an observer from the Ministry of Health and representatives of the Joint Tuberculosis Council and the Tuberculosis Society of Scotland. There will be close liaison with a special subcommittee of the last. Other functions of the Committee will be to supply, when required, advice on the conduct of larger investigations contemplated by official bodies and manufacturing industries, to draw up schemes for adequate trials of newer methods of treatment, and to suggest to individuals and groups of individuals outstanding problems which they might usefully explore. The full Committee will meet several times a year, and there is a standing Working Subcommittee to consider problems as they arise. Communications should be sent to Tuberculosis Association Research Committee, Manson House, 26, Portland Place, London, W.1.

John S. Owens Prize

The John S. Owens Prize of the Royal Sanitary Institute was offered for essays on either atmospheric pollution or the ventilation of dwellings and its effect upon human health. There were six entries for the competition, and the Council of the Institute have awarded the prize of £25 to R. E. O. Williams, M.D., for his essay on the second of these subjects.

Vaccination and Immunization

Local authorities will make arrangements under the National Health Service for medical practitioners to carry out vaccination against smallpox and immunization against diphtheria. The fees to be paid are being negotiated with representatives of the profession and had not been settled by the appointed day. The Minister of Health has therefore sent a letter to local authorities asking them to proceed with the arrangements and to tell practitioners that their fees will be paid as from July 5 according to the scale finally settled.

District Nurses and Midwives

The Minister of Health has reviewed the arrangements for training domiciliary midwives and district nurses. Many of these are trained by voluntary organizations, and the Minister therefore asks local authorities to ensure that existing organizations are enabled financially to continue training on the present scale after July 5.

Sister Tutors

In view of the serious shortage of qualified sister tutors and male tutors of nurses, particularly in mental hospitals and mental deficiency institutions, the Minister has decided to increase the number of scholarships open to candidates this year from 50 to 75. Of these, 25 will be reserved for those who are prepared to give at least two years' service as tutors in mental hospitals or mental deficiency institutions. Nurses who wish to apply under this scheme should write to the Secretary, Ministry of Health, Division 3c, Whitehall, London, S.W.1, not later than July 31.

Scientific Liaison

In order to facilitate scientific co-operation within the Commonwealth the British Commonwealth of Nations Scientific Liaison Offices (London) have been opened on the third floor of Africa House, Kingsway, W.C.2.

Wills

Mr. John William Geary Grant, who was consulting surgeon to the Royal Infirmary, Cardiff, left £4,586 5s. 8d. Dr. Francis Johnston, formerly of Birkenhead, left £24,785; Dr. Helen Winifred Duncan, of Southport, £12,420; and Dr. Vincent Sutherland Hodson, formerly consulting physician to the London Chest Hospital, £4,911.

COMING EVENTS

Ethiopian Exhibition

The Ethiopian Exhibition of Arts, Crafts, and Industries will be held on July 12–17 at the Co-operative Wholesale Society's Boot and Shoe Show Room, 99, Leman Street, London, E.1. Traditional dress, leather work, jewellery, illuminated books, etc., will be shown, and there will be a film about Ethiopia. A box will be provided for donations to the Princess Tsahai Memorial Hospital Fund.

Society of Chemical Industry

The annual general meeting of the Society of Chemical Industry will be held at Edinburgh on Wednesday, Thursday, and Friday, July 14, 15, and 16. The second Lister Memorial Lecture will be delivered by Sir Robert Robinson, P.R.S., on July 15, at 10 a.m. His subject is "The Device of Imitation of Molecules in the Biological Field."

Vision, Light, and Seeing

Dr. Matthew Luckiesh, director of the Lighting Research Laboratory, G.E.C., Cleveland, U.S.A., will read a paper on "Factors Concerned in Vision, Light, and Seeing" at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., on Wednesday, July 14, at 2 p.m. Admission is free and all interested are invited to attend.

Association of Clinical Pathologists

The 40th scientific meeting of the Association of Clinical Pathologists will be held in the general lecture theatre of the University of Sheffield on Friday and Saturday, July 16 and 17. The programme is as follows: July 16, 9.30 a.m., Dr. Joan Taylor (London), "The Pathogenicity of the Paracolon Bacillus"; 9.55 a.m., Dr. R. Goiffon (Paris), "Diarrhées et des Fausses Diarrhées"; 10.15 a.m. Dr. J. Ungar (Greenford), "Distribution of Penicillin in Blood and Inflammatory Tissue"; 10.35 a.m., Dr. L. C. D. Hermitte (Sheffield), "A Short Review of the Pathology, Diagnosis, and Treatment of Amoebiasis"; 11.30 a.m., Dr. W. Weiner (Birmingham), "The Significance of the Coombs Test"; 12 noon, Dr. Rosemary Biggs (Oxford), "Dicoumarin and the Prothrombin Time"; 12.30 p.m., Dr. J. F. Goodwin (Sheffield), "Clinical Aspects of Anticoagulant Therapy"; 2 p.m., demonstrations in the Department of Zoology; 4.30 p.m., Sir Theobald Mathew, "The Collection and Presentation of Evidence"; 5.15 p.m., Dr. G. Forbes (Sheffield), "The Assessment of the Effects of Alcohol." July 17, 9.30 a.m., Dr. A. Dick (Sheffield), "A Simple Method for the Determination of Renal Plasma Flow and Glomerular Filtration Rate using Para-aminohippuric Acid and Sodium Thiosulphate"; 9.55 a.m., Dr. S. Sevitt (Birmingham), "The Neutral Red Excretion Test of Gastric Function"; 10.20 a.m., Dr. A. Durupt (Paris), "Diagnostic de l'Hypothyroidie et Surveillance du Traitement par le Test Métabolique de l'Effort"; 11.15 a.m., Dr. A. H. T. Robb-Smith (Oxford), "Lipomelanic Reticulosis"; 11.35 a.m., Dr. F. O. MacCallum (London), "The Problem of Serum Hepatitis"; 12.5 p.m., Dr. J. Murray (London), "Rapid Slide Method of Rh Grouping"; 12.25 p.m., Dr. K. B. Rogers (Birmingham), "Relationship of Specific Gravity of Erythrocytes to Hypochromasia and its suggested effect on the Sedimentation Rate." The honorary secretary of the association is Dr. W. H. McMenemy, Royal Infirmary, Worcester.

Conference on Civil Engineering Problems

A conference on Civil Engineering Problems will be held at the Institution of Civil Engineers, Great George Street, Westminster, London, S.W., from July 19 to 23, when a number of papers on subjects of importance in Colonial development will be read and discussed. The Rt. Hon. A. Creech-Jones, M.P., Secretary of State for the Colonies, has consented to open the conference on Tuesday, July 20, at 10.15 a.m. The conference is open to members of the institution, to engineers and to other officers specially interested, who are employed in the Colonial Service, and to other engineers who are otherwise engaged in civil engineering work in the Colonies. Included in the programme is a lecture to be given by Prof. George Macdonald, M.D., on "Tropical Hygiene as it Affects the Colonial Engineer," on July 23, at 3 p.m. Details of the papers, lecture, and visits, and application forms, can be obtained from the secretary of the institution at the above address.

SOCIETIES AND LECTURES

Monday

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—July 12, 8.30 p.m. "*Natural Defences and Disorders of the Respiratory Tract.*" Discussion to be introduced by Dr. A. W. Proetz and Prof. R. J. V. Pulvertaft.

Tuesday

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.—July 13, 5 p.m. The Bertram Louis Abrahams Lecture: "*Curare and Curarimimetic Drugs,*" by Dr. J. W. Trevan, F.R.S.

Friday

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—July 16, 5 p.m. "*Growth and Development from the Clinical Aspect of Orthodontics.*" Charles Tomes Lecture by Prof. A. F. Jackson (Professor of Orthodontics, Temple University, Philadelphia).

Saturday

NUTRITION SOCIETY.—At Royal Society of Medicine, 1, Wimpole Street, London, W., July 17, 10.30 a.m. "*The Nutrition of Athletes.*" Whole-day conference.

APPOINTMENTS

Duncan Ballantine, M.B., Ch.B., F.R.C.S.Ed., M.R.C.O.G., has been appointed Gynaecologist to Rotherham (Yorkshire) Hospital and Consultant Obstetrician to the Municipal General Hospital, Rotherham.

Dr. J. K. Craig, of Donnybrook, Dublin, has been granted a Colonial Service Medical Officership in Kenya.

Dr. James A. Harbison, Dublin County Medical Officer of Health since 1931, has been appointed City Medical Officer.

Robert John Harrison, L.R.C.P., M.R.C.S., has been appointed Senior Physician at Fulham Hospital.

Isaac Hunter MacIver, M.B., Ch.B., has been appointed a member of the Scottish Health Services Council.

BIRMINGHAM: CHILDREN'S HOSPITAL.—*Assistant Aural Surgeon and Laryngologist*, Norman L. Crabtree, F.R.C.S., D.L.O. *Assistant Radiologist*, Roy Astley, M.B., Ch.B., D.M.R.

DOUGLAS, D. M., M.B., B.S., M.R.C.P., *Assistant Physician*, Royal Edinburgh Hospital for Sick Children, Sciennes Road, Edinburgh.

DRANSFIELD, C. MURRAY, F.R.C.S., *Orthopaedic Surgeon*, Ashton-under-Lyne District Infirmary and Kershaw Children's Hospital.

FINLAY, H. V. L., M.B., Ch.B., M.R.C.P., D.C.H., *Paediatrician*, Hillingdon County Hospital, Middlesex County Council.

GENERAL HOSPITAL, NORTHAMPTON: *Assistant Consultant Surgeons*, Derek G. Lambley, B.Sc., M.B., F.R.C.S., and E. E. T. Taylor, B.A., B.M., F.R.C.S.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, Haverstock Hill, N.W.—Honorary Surgeon to Out-patients, A. E. Williams, F.R.C.S. Honorary Physician in charge of Physiotherapy Department, A. J. Martin, M.R.C.S., L.R.C.P., D.P.M.

KIDDERMINSTER AND DISTRICT GENERAL HOSPITAL.—*House-physician*, Beryl G. Castell, M.B., Ch.B. *Casualty Officer*, J. Hubert Beswick, M.B., Ch.B.

NICHOLSON, W. F., M.B.E., M.D., M.Ch., F.R.C.S., *Honorary Assistant Surgeon*, Manchester Royal Infirmary.

PARKMAN, T. H., M.B., B.S., D.P.H., Deputy Medical Officer of Health, Hastings.

TOLLAND, JOHN, L.R.C.P. and S.Ed., D.P.H., Joint Medical Officer for Retford Borough, Retford Rural District and Assistant County Medical Officer Notts County Council.

ZOOB, MAX, M.D., M.R.C.P., First Assistant to Cardiological Department, Royal Free Hospital, Gray's Inn Road, London, W.C.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

McCrae.—On June 26, 1948, at Ayrshire Central Hospital, to Eileen, wife of Dr. John S. McCrae, M.B.E., of Rivermead, Catrine, Ayrshire, a daughter.

MARRIAGES

Kinnish—Chamberlain.—On June 22, 1948, at the Church of St. Mary the Virgin, West Derby Village, Liverpool, Raymond Yondy Kinnish, M.B., Ch.B., to Vena Chamberlain.

DEATHS

Barlee.—On June 25, 1948, at Guildford, Surrey, Hobart John William Barlee, M.D., formerly of Tunbridge Wells, aged 80.

Beveridge.—On June 25, 1948, at Edinburgh Royal Infirmary, Gordon Beveridge, M.C., L.R.C.P., and S.Ed.

Connop.—On June 30, 1948, at Rossland, Hatch Beauchamp, Taunton, Herbert Connop, L.R.C.P and S.Ed., L.R.F.P.S. Glas., Major R.A.M.C., T.A., retired.

Cooke.—On June 28, 1948, Martin Alfred Cooke, O.B.E., T.D., M.R.C.S., L.R.C.P.

Fleming.—On June 27, 1948, at 25, Belgrave Crescent, Edinburgh, Colonel Archibald Nicol Fleming, D.S.O., I.M.S., retired, aged 79.

Forrest.—On June 22, 1948, suddenly, Alexander Robb Forrest, M.B., Ch.B., D.P.H.

Hall.—On June 26, 1948, at 45, Belgrave Road, Birmingham, John Arthur Hall, M.R.C.S., L.R.C.P., aged 78.

Heggs.—On July 1, 1948, at a Jersey nursing home, Thomas Barrett Heggs, M.D., D.P.H., of Dagmar, Market Hill, St. Aubins, Jersey, aged 68.

Mossop.—On June 25, 1948, at Briarwood, Hythe, Charles Henry Mossop, M.R.C.S., L.R.C.P.

Ross.—On June 28, 1948, Thomas Lawrence Ross, M.B., B.Ch., B.A.O.

Tierney.—On July 3, 1948, at 46, Gloucester Place, London, W., Thomas Tierney, M.D., aged 79.

Tindal.—On June 22, 1948, at Stracathro Hospital, suddenly, David Duncan Tindal, M.D., Ed., M.B., C.M.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Syphilitic Aortitis

Q.—*What is the best method of treating syphilitic aortitis, and how does treatment alter the prognosis?*

A.—Most people nowadays would employ penicillin in the treatment of *uncomplicated* syphilitic aortitis but would start with very small doses in order to avoid the risk of a Herxheimer reaction. It is advisable to begin with a dose of 500 units, increasing fairly rapidly till each injection contains 50,000 units, provided there is no untoward reaction. The total dose should be 8 to 10 mega units, and injections should be given every three hours. As yet there is little evidence available on the efficacy of penicillin alone, so that iodides, bismuth, and arsenic should all be employed as well. Arsenic in the form of neoarsphenamine should be used in doses of 0.1 g. at first, increasing slowly to a maximum of 0.6 g. Treatment should extend over a period of at least two years and most reliance should be placed on bismuth during the second year. Treatment improves the prognosis considerably. Moore (*Modern Treatment of Syphilis*, 1943) states that 63 of 75 patients (84%) obtained symptomatic relief, and that in a series of 115 patients adequate treatment reduced the mortality from 42 to 14% over a period of eight years and the incidence of complications, such as aneurysm or aortic regurgitation, from 31 to 19%.

Fluorescent Lighting

Q.—*Is fluorescent lighting injurious to health and to eyesight?*

A.—The efficacy of this type of lighting is the subject of considerable controversy among ophthalmic surgeons. The firms responsible for the manufacture and installation are naturally biased in its favour, and they and their representatives do all they can to popularize it. The writer believes that there are factories where the lighting has been tried but where the ordinary tungsten-filament bulbs have been reinstalled. Patients certainly complain about fluorescent lighting. In some cases the trouble is due to bad choice of colour, bad positioning of tubes, stroboscopic effects, lack of special methods to remove glare, lack of shadow, bad atmospheric conditions, and inattention to cleansing of the tubes and their replacement when worn out.

The writer's opinion, after having seen numerous cases, is that, given a healthy and robust eye, properly corrected for errors of refraction, and good working conditions with regard to air-conditioning, freedom from dust, etc., the light has no bad effect if the exposure is not over very lengthy periods, but he has no doubt that tungsten light is kinder to eyes which are slightly subnormal.

Climate and Asthma

Q.—*A patient aged 58, a chronic sufferer from bronchial asthma, bronchitis, and vasomotor rhinitis aggravated by cold and damp weather, wishes to know whether a sojourn in South Africa, Rhodesia, California, or Switzerland is worth a trial to obtain relief. The title of a textbook which guides one in choice of a suitable climate in the treatment of asthma and other bronchial affections would be welcomed.*

A.—It is likely that this patient would derive most benefit from a climate which is warm and dry without being dusty. South Africa or California would meet these requirements. There are few modern textbooks which deal with climatology, although recommendations of the type required will be found in most standard works on the treatment of the affection in question. The classical book on the general aspects of climatology is *Climatotherapy and Balneotherapy*, by Sir H. Weber and F. P. Weber (Smith Elder and Co., London, 1907). M. Piéry's *Traité de Climatologie Biologique et Médicale* (Paris, Masson et Cie., 1934) is a more recent and comprehensive work; while E. Hawkins's *Medical Climatology of England and Wales* (London, H. K. Lewis, 1923) has a more local application.

Para-aminobenzoic Acid

Q.—*Can para-aminobenzoic acid be obtained in tablet form? Are there any dangers from doses of the order of 200 to 300 mg. daily, and is the therapeutic activity of this substance proved?*

A.—Para-aminobenzoic acid can be obtained in bulk from several leading chemical manufacturers, but it is not obtainable in tablet form. A dose of 200 to 300 mg. daily is probably quite safe to administer, but leucopenia, nausea, and tympanites have been reported in patients receiving 12 g. or more daily. It has been used in the treatment of certain rickettsial diseases, such as Rocky Mountain spotted fever, typhus, and scrub typhus. The dose is from 12 to 30 g. daily. The premature claims for the treatment of grey hair with para-aminobenzoic acid have not been substantiated.

Control of Micturition after Prostatectomy

Q.—*How long does it usually take to acquire normal control of micturition after the suprapubic removal of an enlarged non-malignant prostate? One patient, aged 70, had this operation some months ago and is still liable to incontinence, especially in the latter half of the day.*

A.—No useful estimate can be given of the time taken to acquire control of micturition after a suprapubic prostatectomy, as it varies so much in different patients. An elderly man is likely to take longer than a younger one. It would be useful to pass a catheter and to discover whether there is any residual urine. The patient should also exercise his sphincter by stopping the stream during micturition and restarting it. Voluntary stimulation of the sphincter can also be supplemented by electrotherapy in the form of stimulation of the perineal muscles with a faradic or sinusoidal current.

Loss of Weight after Hysterectomy

Q.—*Does loss of weight usually follow hysterectomy? A patient aged 36 has lost 3 st. (19 kg.) in the past three years following hysterectomy and removal of one ovary. The wasting is confined to the trunk and upper limbs, the lower limbs being quite muscular. The face is wrinkled and drawn. Her appetite is good, she feels well, and she leads an active life. Is Simmonds's disease a possibility?*

A.—Neither removal of the uterus nor removal of the ovaries usually causes a significant loss in weight. Bilateral oophorectomy is sometimes followed by an increase in weight, although this is often only temporary. It seems unlikely that the wasting in this case has any direct relation to the operation, and another cause should be looked for. There is nothing in the account to suggest Simmonds's disease, which is not, as was formerly supposed, characterized by cachexia.

Treatment of Coccygodynia

Q.—*A thin delicate woman, aged 55, complains of pain in the terminal coccygeal vertebra; this pain has been present for a year and is aggravated on sitting or lying. Examination reveals a prominent terminal vertebra with a bulbous contour. Would injecting the area with one of the sclerosing fluids used for varicose veins be effective? What other treatment would you recommend?*

A.—The condition described appears to be a form of coccygodynia, a complaint that unfortunately it is not always easy to cure. In view of the bulbous contour of the coccyx it would be helpful to have a radiograph taken, to see whether there is any cyst formation or other bone disease. If there is, or if any other organic lesion—e.g., displacement—is present, there might be an indication for excision of the coccyx. In the ordinary case of this kind, however, *x*-ray changes are not present, and surgical treatment is not usually required. Treatment by local injections into the area of tenderness is sometimes helpful. Solutions commonly used are procaine (2%) or "proctocaine." Sclerosing fluids are not advised for injection in this site. If injection treatment fails, physiotherapy, preferably

in the form of short-wave diathermy, will often afford considerable relief. If there is no organic lesion "time" is the best healer.

Inoculation and Vaccination

Q.—*A party of some 30 senior schoolboys propose to visit France in August. Would you please advise me on the necessity for prophylactic treatment against the enteric group and smallpox? Most of these boys are adolescents, and it is unlikely that they have been vaccinated previously.*

A.—Inoculation against the enteric group should be recommended to any person proposing to travel on the Continent, since the hazard of typhoid fever in this post-war period is not negligible. Boys of 14–18 years should be given the adult dose of T.A.B. vaccine—two injections at 10–14 days' interval given in the late afternoon or evening with an aspirin tablet prescribed at bedtime and no strenuous exercise next day.

Primary vaccination of adolescents against smallpox, besides causing a fair degree of local and constitutional upset, does carry a very small risk of postvaccinal encephalitis. Where, therefore, there is no compulsory regulation requiring a certificate of vaccination within the past three years, it is better not to vaccinate unless there is any evidence of smallpox being prevalent in the country to which the boys are travelling. Occasional cases and outbreaks are, of course, liable to occur in France by introduction from North Africa or the East, but the risk for a group of boys going on a conducted tour must ordinarily be very small.

Treatment of Thrombophlebitis

Q.—*Would dicoumarol be beneficial in the case of an active woman of 39 who has suffered from thrombophlebitis of both legs for six months? The condition improved in hospital and afterwards at home, when she was kept in bed; but in each case when she was allowed to get up the pain and swelling returned, with marked tenderness in the thighs.*

A.—This type of case often benefits from dicoumarol combined with supportive bandaging with "elastoplast" or elastic bandages. The former should be worn all the time and the latter in the daytime only. Sleeping with the head low is also of value. The dicoumarol should be administered with care and with a view to keeping the prothrombin time double the normal; in some of these cases a two-months' course is necessary. Some patients (and doctors) are inclined to regard the swelling and aching which persist after subsidence of the attack as a continuation of the condition. Support is sufficient for this; dicoumarol is necessary only when tenderness and induration persist. Focal sepsis must be excluded, and if the blood pressure is low it may be as well to prescribe ephedrine or amphetamine.

Vitamin B and Hair

Q.—*What preparation of vitamin B (whole complex) would you advise for poor-quality hair following pregnancy? Can better results be obtained with parts of the B complex? Are any ill effects likely with large doses of individual B factors?*

A.—There is no preparation of the vitamin B complex that improves the poor quality of hair. Hair lacking in lustre ("staring" hair) has been described in undernourished subjects, particularly in Newfoundland, but it has not been possible to ascribe it to lack of any specific vitamin. Para-aminobenzoic acid has been used for the treatment of grey hair, but controlled observations have failed to substantiate the early claims for it. The uncontrolled use of this drug is inadvisable, as it may cause leucopenia.

The Safe Period

Q.—*A patient has consulted me for the exact details of the so-called "safe period." She is 34 and has one child, aged 3½ years. I have replied that there is no absolute "safe period" during the menstrual cycle, but I would welcome an expert's opinion—i.e., what is the modern view on this form of contraception?*

A.—The existence of a "safe period" is based on the fact that ovulation usually takes place 14±2 days before the onset of the next period and that the ovum and spermatozoa retain their fertility for not longer than 24 and 48 hours respectively. The time of ovulation, however, is not so constant as to make the "safe period" absolutely safe, but it is relatively so. Indeed, in some women it is remarkably reliable. In the case in question the cycle usually lasts 27 or 28 days with an occasional shortening to 25 or 26 days. The fertile period is therefore between the 7th and 18th days, counting from the first day of the last menstrual period; any other time in the cycle should be reasonably safe. See also replies to questions previously published in the *Journal* (1943, **2**, 286; 1944, **2**, 260).

Spina Bifida and Incontinence

Q.—*How often is spina bifida responsible for incontinence of urine? I have in mind a boy of 7 years who suffers from incontinence, dribbling of urine occurring equally during the day and at night-time. It started about three years ago and is getting worse. After a thorough investigation in hospital the condition was considered to be due to occult spina bifida. An operation is suggested, presumably to relieve hypothetical traction on the cauda equina. What results have hitherto been obtained by such an operative procedure, and what risk is inherent in the operation?*

A.—Spina bifida often causes incontinence of urine. The results of operation are uncertain. Sometimes traction can be relieved or adhesions between nerve roots and the arachnoid can be divided, with relief of urinary incontinence. But more often the result of operation is disappointing. In the case mentioned a boy aged 7 began to have incontinence only three years ago. This is a rather unusual story for spina bifida, and while the diagnosis may be correct there might be some other cause for the incontinence.

NOTES AND COMMENTS

Mauling by Tigers.—Dr. C. S. P. HAMILTON (Kapnapahar, E. Bengal) writes: It has fallen to my lot to treat many animal maul cases. In this district tiger and panther maul casualty patients are the most frequent. The commonest wounds are claw wounds, which can be truly incised as well as lacerated. Out of the last four cases coming under treatment this year, they have all been claw wounds. This is due to the animal—often female with young—being suddenly frightened; in consequence it rushes out and hits wildly with its fore paws, and generally runs off. One of the worst cases I had suffered from an apparently incised wound from the left mastoid down the anterior triangle of the neck exposing the carotid; in addition there were lacerated wounds on the right cheek. If the animal wishes to kill it seems to first strike with the paws, then pounce on the victim, in my experience nearly always attacking the head and neck. Scalping is quite common in tiger wounds. One such case showed teeth wounds—lacerated—over both mastoids and a horizontal lacerated wound in the occipital area, with claw wounds over the left scapula. The woman was kneeling on the ground doing up a bundle of wood when the man-eater attacked her from behind.

Treatment now is simple. Clean the wounds, remove torn tissue, fill with sulphonamide powder, and dress with petroleum jelly, penicillin, and sulphonamide paste. Inject penicillin, and the wounds heal by almost first intention. If these victims are not killed on the spot, they nearly always survive. Our last seven cases have a 100% recovery.

Care of Teeth in Children.—Mr. J. H. BADCOCK (Bury St. Edmunds, Suffolk) writes: Referring to the reply in "Any Questions?" (June 12, p. 1165) on the care of the teeth of children, surely the all-important reason for saving the temporary teeth is the preservation of their masticatory function at its maximum until their permanent successors take their places—years when growth is most active and perfect nutrition most essential.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone.

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